

CHAPTER 12

MAINTENANCE OF HERCULES MOBILE LAUNCHING SECTION MODIFICATION KIT

Section I. GENERAL

204. Scope

This chapter contains maintenance information covering the components of the mobile launching section modification kit within the scope of direct and general support personnel. The scope of maintenance is determined by the listing of parts in TM 9-1440-250-25P/1/1, and the listing of special tools in SC 4935-92-CL-011.

205. References

Organizational maintenance of the mobile launching section modification kit is covered in TM 9-1440-250-20/1. Schematic diagrams are furnished in TM 9-1440-250-12/2 and wiring lists are provided in TM 9-1440-250-35/1,

to eliminate duplication of coverage. General maintenance procedures are provided in TM 9-1400-250-15/3. Additional general maintenance procedures applicable to performing maintenance on the mobile launching section modification kit are provided in chapter 4. It is especially important that personnel become familiar with the contents of chapter 4 and TM 9-1400-250-15/3. No references to general maintenance procedures are provided in this chapter.

206. General Precautions

When performing maintenance on the hydraulic or electrical systems of the mobile launching section modification kit, observe the precautions described in paragraph 58.

Section II. MAINTENANCE OF TRANSPORT MODIFICATION KIT

207. Mobile Launcher Axle

a. General. Maintenance operations will normally be performed on components of the mobile launcher axle (fig. 295) with the axle removed from the HERCULES monorail launcher. Refer to TM 9-1440-250-12/2 for axle removal procedures. After the axle has been removed from the launcher, the parking brake lever (10, view A) should be actuated to set the brakes, and the draincock (11, view A) should be opened to relieve the brake system air pressure.

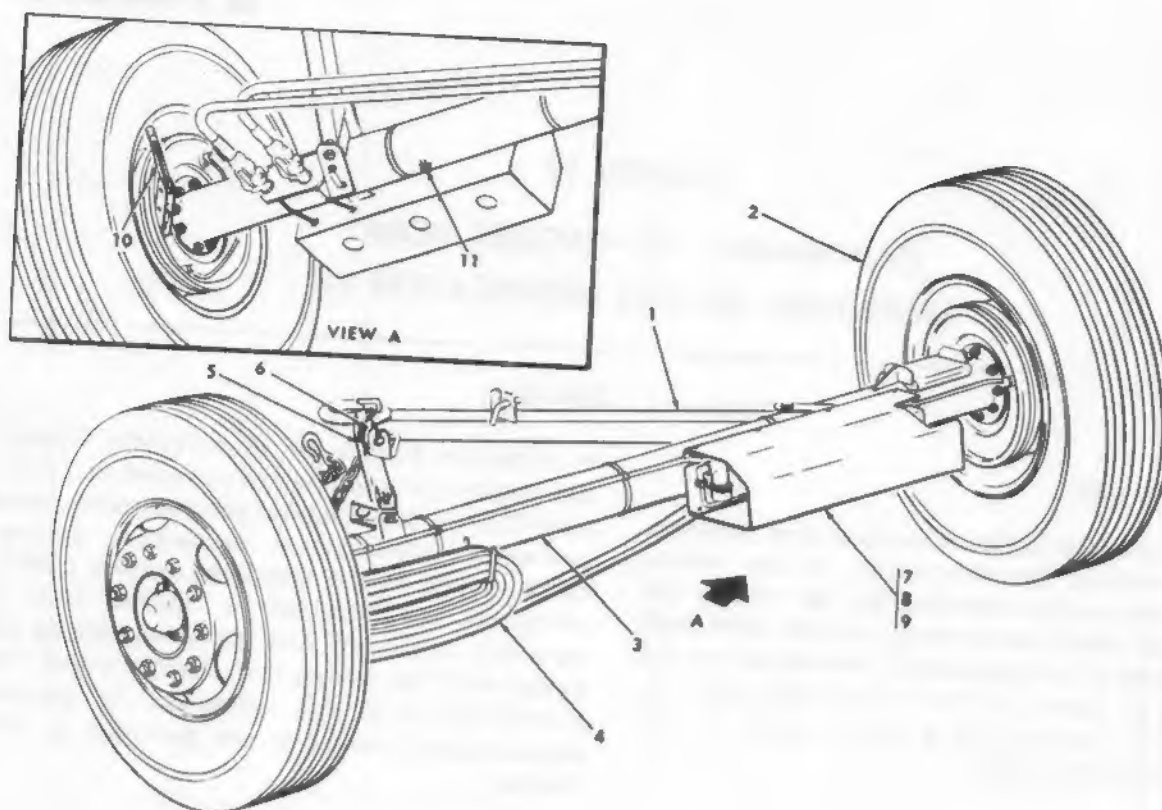
b. Brake System Power Cluster.

- (1) *Location and access.* The brake system power cluster includes the air cleaner (1, fig. 296), relay valve assembly (2), air cylinder assembly (3), and master cylinder assembly (4). To gain access to these components of the power cluster

for units 145 and subsequent, remove the cover (9, fig. 295).

Caution: Brake system air pressure must be relieved as described in paragraph 207a, and hydraulic fluid drained from the brake system before performing procedures in (2) through (6) below. Refer to TM 9-1440-250-20/1 for the brake system hydraulic fluid drain procedures.

- (2) *Tube assemblies.* Remove the tube assemblies (fig. 297) as necessary to perform maintenance. Cap all open lines or tubes to prevent entry of foreign material.
- (3) *Relay valve assembly.*
 - (a) *Removal.* Disconnect the tube assemblies and remove the relay valve assembly (6D, fig. 298).



- 1 — Towbar arm 9021614
- 2 — Wheel and tire group (2)
- 3 — Axle
- 4 — Air hose assy (2)
- 5 — Towbar arm 9021626
- 6 — Connecting link

- 7 — $\frac{1}{4}$ -28 x $1\frac{1}{2}$ hex-hd bolt (8)
- 8 — $\frac{1}{4}$ -inch lockwasher (8)
- 9 — Cover 9152782 (145 and subsequent)
- 10 — Parking brake lever 6100C26-1098 (RH) or 6100C26-1099 (LH)
- 11 — Draincock

ORD G55893

Figure 295. Location of components on mobile launcher axle.

(b) Disassembly.

1. Remove the diaphragm and cover group (8, fig. 299) and the diaphragm spring (4) from the valve and housing assembly (5).
2. Disassemble the diaphragm and cover group (fig. 300).
3. Remove the emergency valve assembly (8, fig. 299) and the gasket (9).
4. Disassemble the emergency valve assembly (fig. 301).
5. Disassemble the valve and housing assembly (fig. 302).

(c) Assembly.

1. Assemble the valve and housing assembly (fig. 302).
2. Assemble the emergency valve assembly (fig. 301) and install in

- the valve and housing assembly (5, fig. 299) with the gasket (9).
3. Assemble the diaphragm and cover group (fig. 300) and install in the valve and housing assembly (5, fig. 299) with the spring (4).

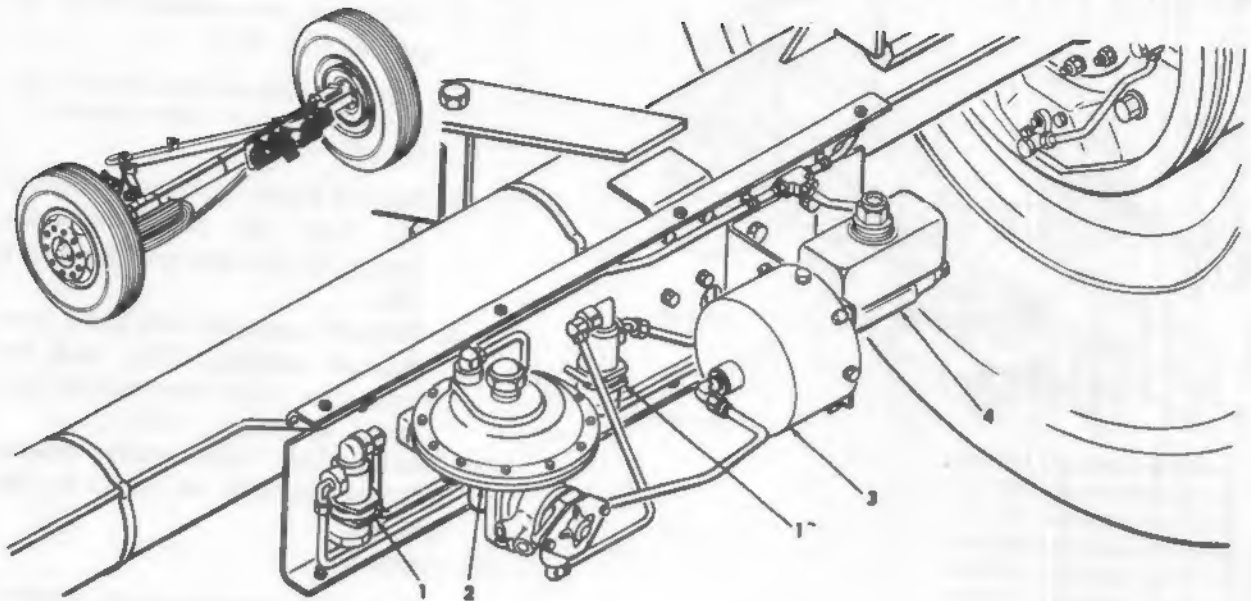
(d) Installation.

1. Install the relay valve assembly (6D, fig. 298) on the double-angle bracket (5).
2. Connect the associated tube assemblies (fig. 297).
3. Test the brake system and adjust in accordance with procedures in TM 9-1440-250-20/1.

(4) Air cylinder assembly.

(a) Removal.

1. Disconnect the tube assemblies as required (fig. 297).



ORD G55894

- 1—Air cleaner (2)
 2—Relay valve assembly 9026938-1 (145 and subsequent) or 8016938 (1 through 144)

- 3—Air cylinder assembly
 4—Master cylinder assembly

Figure 296. Component location for brake system power cluster.

Note. The key numbers shown in parentheses in 2 and 3 below refer to figure 303.

2. Remove stroke indicator assembly (1), bolts (3), master cylinder group (5), and air cylinder group (6).
3. Remove elbow (6A) from air cylinder assembly (6B).
- (b) *Disassembly.* Disassemble air cylinder assembly (fig. 304).
- (c) *Assembly.*

Note. The key numbers shown in parentheses in 1 through 4 below refer to figure 304.

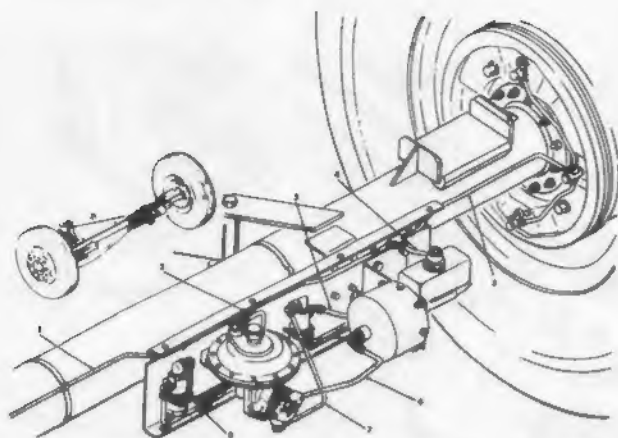
1. Position strainer (4B) and curled hair (4C) in cylinder head (4D) and secure with remaining strainer (4B) and retainer (4A).
2. Install felt oil retainer (9) and cup and spring assembly (8) on piston and rod assembly (7), and

install in cylinder and inlet assembly (3).

3. Install boot (5), power cylinder spring (6), and cylinder head assembly (4) in cylinder and inlet assembly (3).
4. Check piston and rod assembly (7) for freedom of travel within cylinder and inlet assembly (3).
- (d) *Installation.*

Note. The key numbers shown in parentheses in 1 and 2 below refer to figure 303.

1. Install elbow (6A) on air cylinder assembly (6B).
2. Position air cylinder group (6) and master cylinder group (5) on mounting plate (7) and secure with lockwasher (2), stroke indicator assembly (1), lockwasher (4), and hexagon-head bolts (3).



- 1—Tube assembly 8017059
- 2—Tube assembly 9977259
- 3—Tube assembly 9021750
- 4—Tube assembly 9152866
- 5—Tube assembly 9152862
- 6—Tube assembly 9152866
- 7—Tube assembly 9152862
- 8—Tube assembly 9152863

Figure 297. Tubing network location on mobile launcher axle.

- 3. Connect tube assemblies (fig. 297).
- 4. Test brake system and adjust in accordance with procedures in TM 9-1440-250-20/1.
- (5) Master cylinder assembly.

(a) Removal.

1. Disconnect tube assemblies as required (fig. 297).

Note. The key numbers shown in parentheses in 2 and 3 below refer to figure 303.

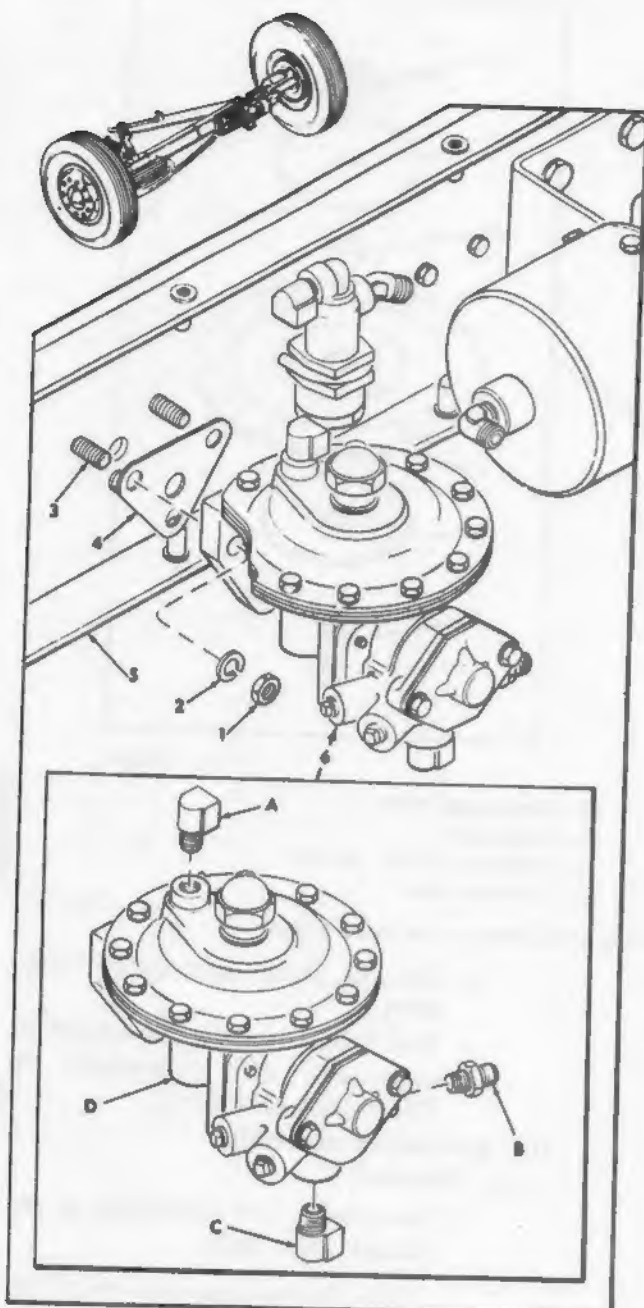
2. Remove stroke indicator assembly (1), bolts (3), master cylinder group (5), and air cylinder group (6).
3. Remove connector bolt (5A), preformed packing (5B), and tee connector (5C) from master cylinder assembly (5D).

(b) Disassembly. Disassemble master cylinder assembly as shown in figure 305.

(c) Assembly.

Note. The key numbers shown in parentheses in 1 through 4 below refer to figure 305.

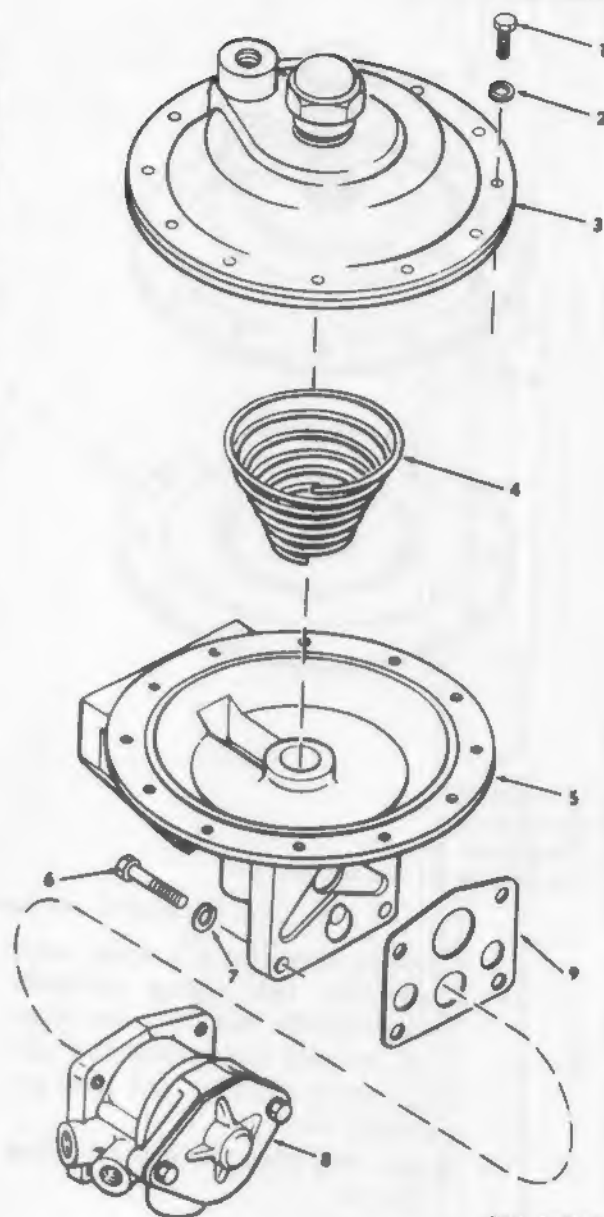
1. Apply a light coat of hydraulic brake fluid 9150-231-9071 to components and interior of master cylinder and plug assembly (8).
2. Assemble cup (8B) and ring (3A) on piston and protector assembly (8C).



ORD G55896

- 1—3/8-24 hexagon nut (3)
- 2—3/8-inch lockwasher (3)
- 3—Stud (3)
- 4—Gasket
- 5—Double-angle bracket
- 6—Relay valve group
- A—Elbow
- B—Adapter
- C—Elbow
- D—Relay valve assembly 9026938-1 (145 and subsequent) or 8016936 (1 through 144)

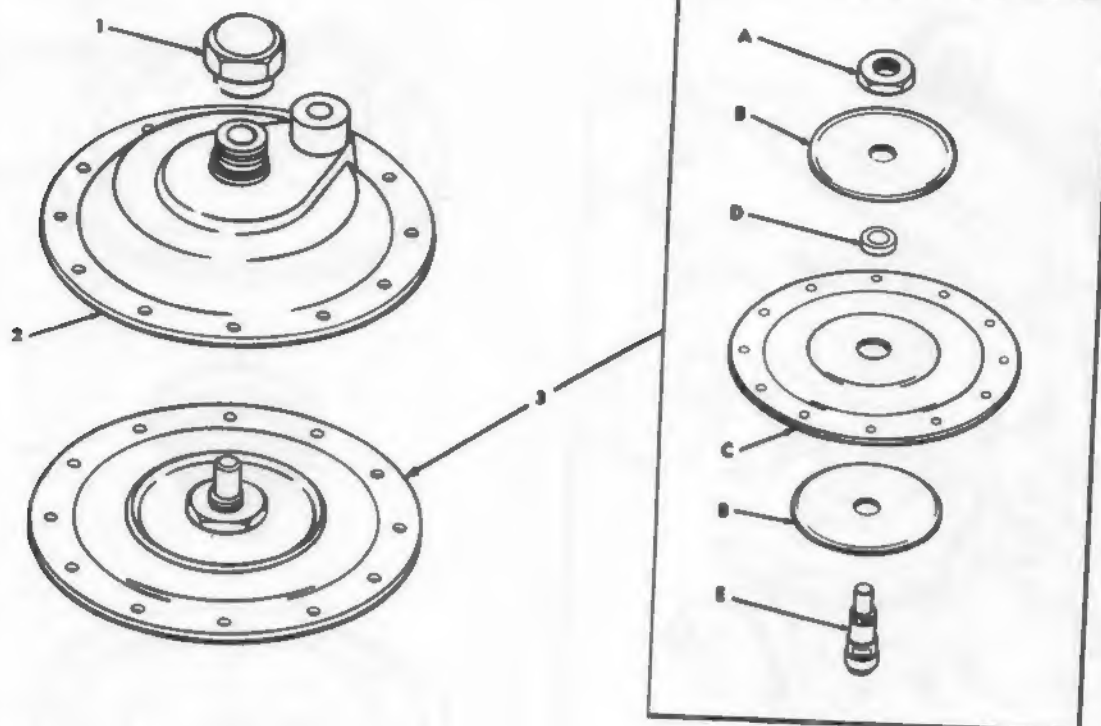
Figure 298. Removal and installation of relay valve assembly.



ORD G55897

- 1—1/4-20 x 3/4 hexagon-head screw (12)
- 2—1/4-inch lockwasher (12)
- 3—Diaphragm and cover group
- 4—Diaphragm spring
- 5—Valve and housing assembly
- 6—1/4-20 x 1 hexagon-head screw (4)
- 7—1/4-inch lockwasher (4)
- 8—Emergency valve assembly
- 9—Gasket

Figure 299. Disassembly and assembly of relay valve assembly.



ORD G55899

- 1—Exhaust cap
2—Cover plate
3—Diaphragm assembly
A—5/8-18 x 1 3/8 hexagon nut

- B—Diaphragm plate
C—Diaphragm
D—0.627-inch-id flat washer
E—Exhaust stem

Figure 300. Disassembly and assembly of diaphragm and cover group.

3. Install valve seat (7), check valve assembly (6), spring assembly (5), cylinder cup (4), and master cylinder piston assembly (3) in master cylinder and plug assembly (8).
 4. Install stop plate (2) and retaining clip (1).
- (d) *Installation.*

Note. The key numbers shown in parentheses in 1 and 2 below refer to figure 303.

1. Install connector bolt (5A), preformed packing (5B), and tee connector (5C) on master cylinder assembly (5D).
2. Position master cylinder group (5) and air cylinder group (6) on mounting plate (7) and secure with lockwasher (2), stroke indicator assembly (1), lockwasher (4), and hexagon-head bolts (3).

3. Connect tube assemblies (fig. 297).
 4. Test brake system and adjust in accordance with procedures in TM 9-1440-250-20/1.
- (6) *Air cleaner assembly.*
- (a) *Removal.*

1. Disconnect tube assemblies as required (fig. 297).

Note. The key numbers shown in parentheses in 2 and 3 below refer to figure 306.

2. Remove nuts (1), lockwashers (2), U-bolt (3), and air cleaner group (4).
 3. Remove elbows (4A and 4B) from air cleaner assembly (4C).
- (b) *Disassembly.* Disassemble air cleaner assembly as shown in figure 307.
- (c) *Assembly.* Assemble air cleaner assembly as shown in figure 307.

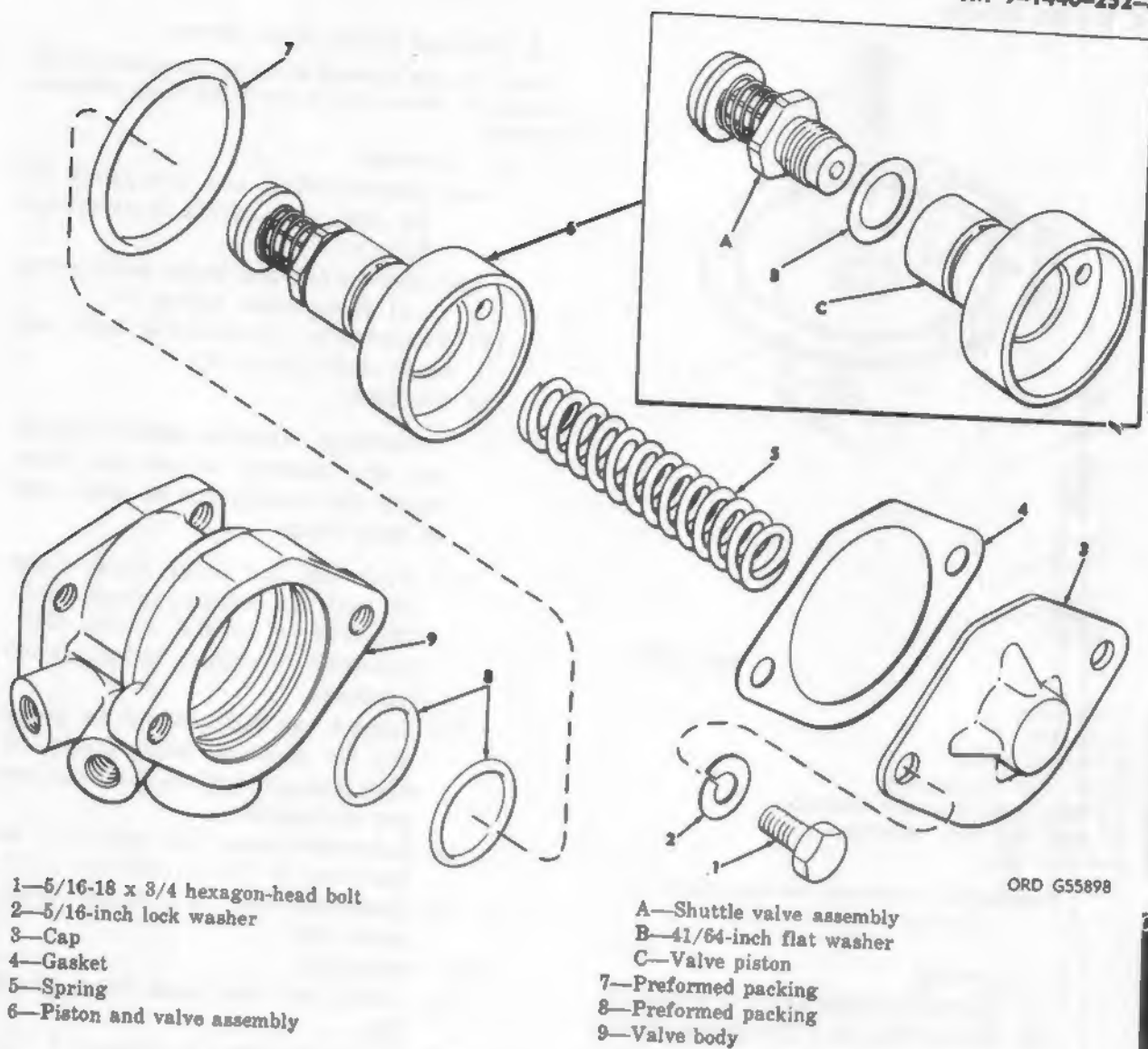


Figure 301. Disassembly and assembly of emergency valve assembly.

(d) Installation.

Note. The key numbers shown in parentheses in 1 and 2 below refer to figure 306.

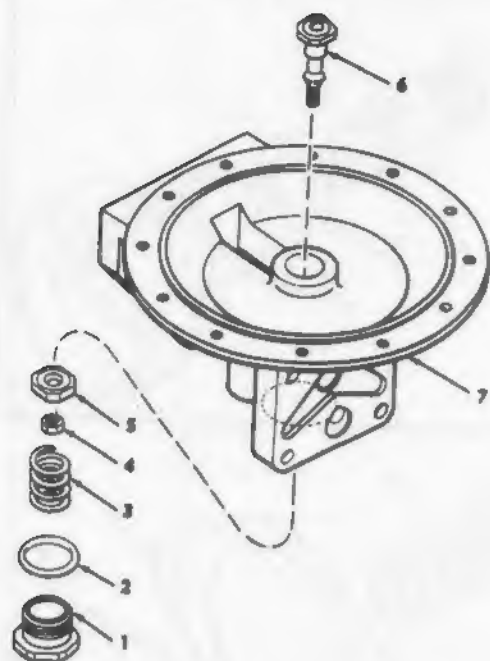
1. Install elbows (4A and 4B) on air cleaner assembly (4C).
2. Install air cleaner group (4).
3. Connect tube assemblies (fig. 297).
4. Test brake system and adjust in accordance with procedures in TM 9-1440-250-20/1.

c. Wheel and Tire Group.

Note. The key numbers shown in parentheses in (1) through (4) below refer to figure 308 unless otherwise indicated.

(1) Removal.

- (a) Check that parking brake lever (10, fig. 295) is in locked position on wheel that is not to be removed.
 - (b) Install automotive jack (4) and remove wheel and tire group (2).
- (2) *Disassembly.* Disassemble wheel and tire group (2).



ORD G55900

- 1—End cap
- 2—Gasket
- 3—Return spring
- 4—No. 6-32 hexagon nut
- 5—Valve body and insert assembly
- 6—Body and insert assembly
- 7—Valve body

Figure 308. Disassembly and assembly of valve and housing assembly.

(3) Assembly.

- (a) Assemble wheel and tire group (2).
- (b) Place wheel and tire group (2) flat on ground with side ring (2Aa) next to ground.

Warning: Make certain that wheel and tire group (2) is in this position before inflating inner tube (2B). The ground will protect personnel from possible injury if the side ring (2Aa) springs loose when the inner tube (2B) is inflated in step (c) below.

- (c) Inflate inner tube (2B) to 75 ± 5 psi.
- (4) Installation. Install wheel and tire group (2) and remove automotive jack (4).

d. Hub and Brake Drum Group.

Note. The key numbers shown in parentheses in (1) through (4) below refer to figure 309 unless otherwise indicated.

(1) Removal.

- (a) Remove wheel and tire group (2, fig. 308) as described in paragraph 207c(1).
- (b) Remove hub and brake drum group (8) from brake group (9).
- (2) Disassembly. Disassemble hub and brake drum group (8).
- (3) Assembly.

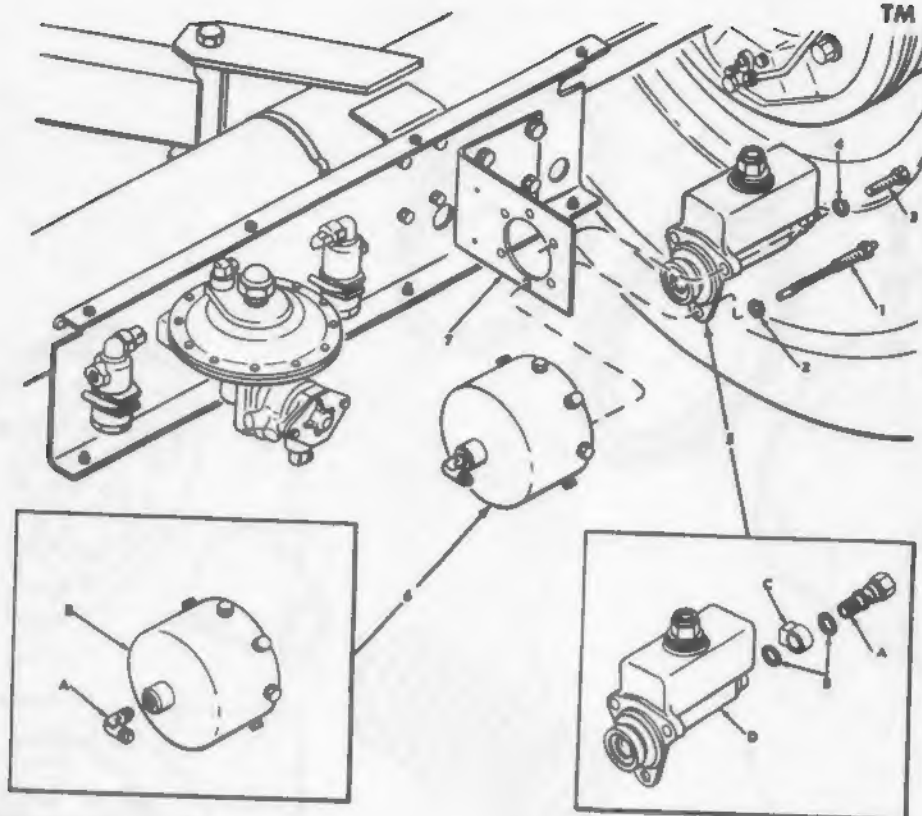
Warning: Volatile mineral spirits and dry cleaning solvent are flammable and should not be used near an open flame.

- (a) Wash hub and brake drum group (8) with dry cleaning solvent 6850-336-8170 or mineral spirits 8010-242-2089. Use brush to remove old lubricant.
- (b) Inspect hub and brake drum group (8) for excessive wear, cracks, or other damage. Replace parts that are not serviceable.
- (c) Lubricate cones (8A) and (8D) as described in TM 9-1440-250-20/1.
- (d) Assemble hub and brake drum group (8).
- (4) Installation.
 - (a) Install hub and brake drum group (8).
 - (b) Install wheel and tire group (2, fig. 308) and remove automotive jack (4, fig. 308).
 - (c) Perform hydraulic brake adjustment as described in TM 9-1440-250-20/1.
 - (d) Perform parking brake adjustment as described in TM 9-1440-250-20/1.
 - (e) Perform brake test as described in TM 9-1440-250-20/1.

e. Brake Group and Wheel Cylinder Assembly.

(1) Removal.

- (a) Open draincock (11, view A, fig. 295).



ORD G55903

- 1—Stroke indicator assembly
- 2—3/8-inch lockwasher
- 3—3/8-16 x 1 1/2 hexagon-head bolt (2)
- 4—3/8-inch lockwasher (2)
- 5—Master cylinder group
- A—Connector bolt
- B—Preformed packing (2)

- C—Tee connector
- D—Master cylinder assembly
- 6—Air cylinder group
- A—Elbow
- B—Air cylinder assembly
- 7—Mounting plate

Figure 303. Removal and installation of air cylinder group and master cylinder group.

- (b) Remove wheel and tire group (2, fig. 308) as described in paragraph 207c(1).
- (c) Remove hub and brake drum group (8, fig. 309) from brake group (9, fig. 309).

Note. The key numbers shown in parentheses in (d) through (g) below refer to figure 310 unless otherwise indicated.

- (d) Remove shoe spring (8).
- (e) Compress spring (2) and disengage wire rope assembly (1) from lever (6).
- (f) Remove retaining clips (4), shoe spring (5), lever (6), and connecting link (7).
- (g) Remove brake shoes (13 and 18).

Note. The key numbers shown in parentheses in (h) and (i) below refer to figure 311.

- (h) Remove headed straight pin (11) and remove wire rope assembly (12).

- (i) Remove wheel cylinder assembly (8), connect to ground (13, view A), and tube assemblies (14 and 15, view A).

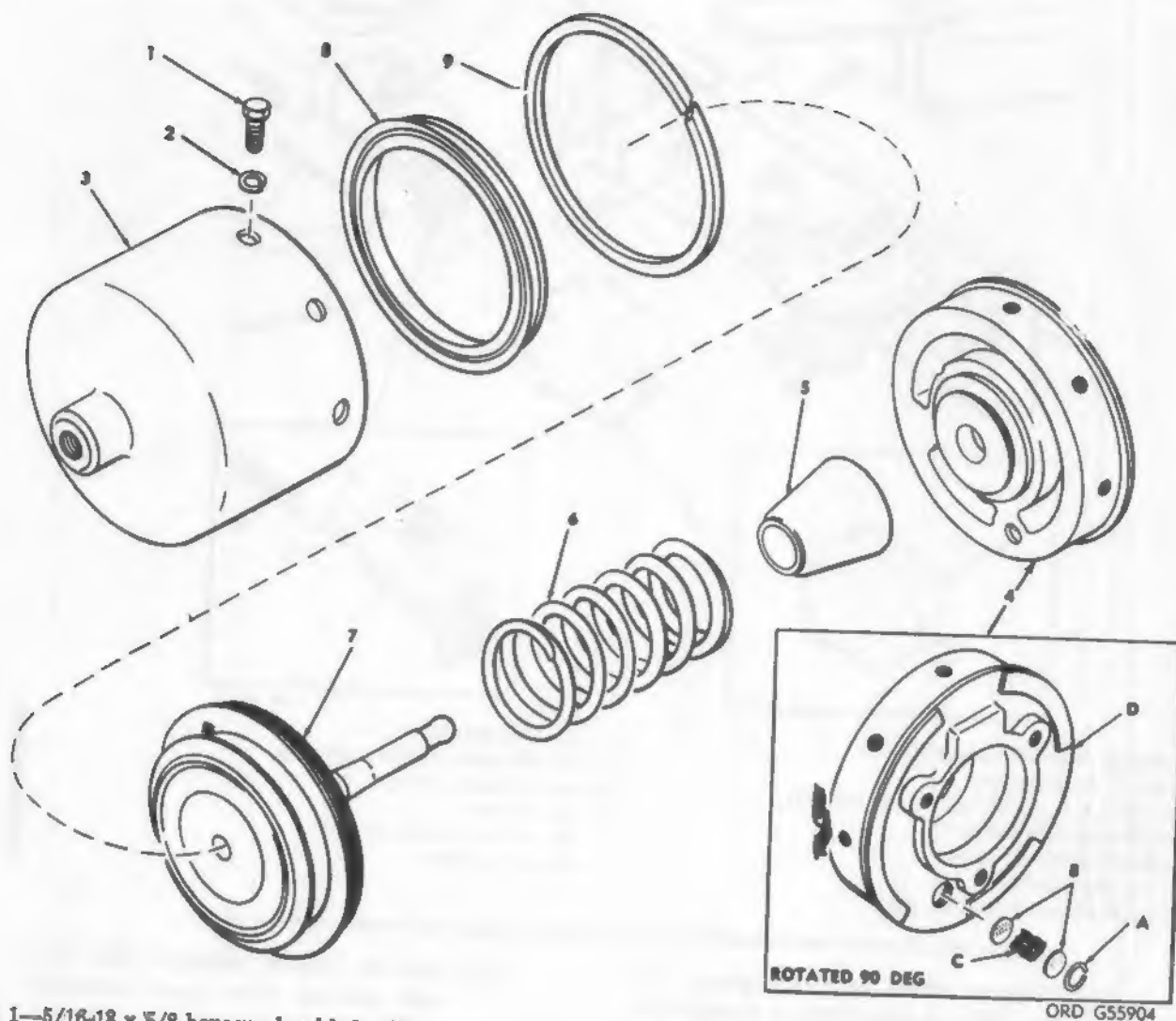
Note. The key numbers shown in parentheses in (2) through (4) below refer to figure 311 unless otherwise indicated.

(2) Disassembly.

- (a) Disassemble wheel cylinder assembly (8).
- (b) Disassemble connector group (13, view A).

(3) Assembly.

- (a) Clean links (8a), bleeder valve



- 1—5/16-18 x 5/8 hexagon-head bolt (8)
- 2—5/16-inch lockwasher (8)
- 3—Cylinder head assembly
 - A—Retainer
 - B—Strainer
 - C—Curled hair

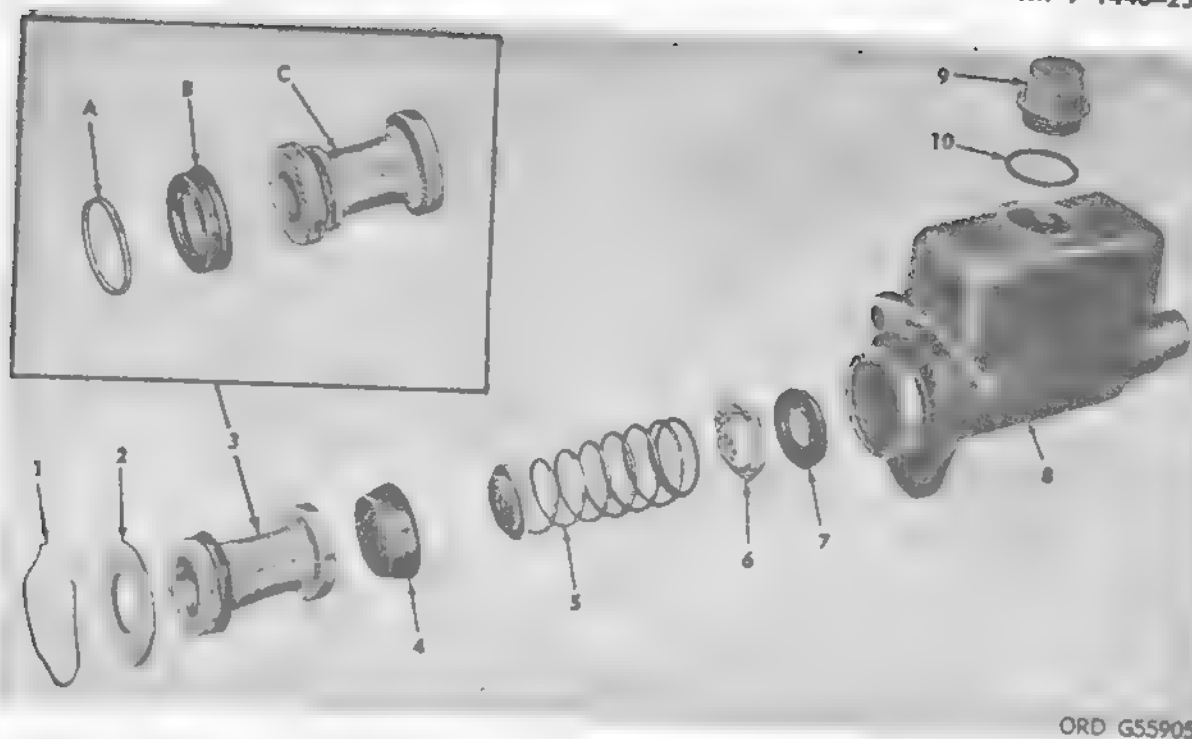
- D—Cylinder head
- 5—Boot
- 6—Power cylinder spring
- 7—Piston and rod assembly
- 8—Cup and spring assembly
- 9—Felt oil retainer

Figure 804. Disassembly and assembly of air cylinder assembly.

- (8e), and cylinder (8f) with hydraulic brake fluid 9150-231-9071.
- (b) Inspect inside of cylinder (8f) for corrosion or scratches and replace cylinder (8f) if necessary.
- (c) Apply a light coat of hydraulic brake fluid 9150-231-9071 to inside of cylinder (8f) and other components of wheel cylinder assembly (8).

Note. Overhaul kit 7412066 containing boot (8b), retainers (8c, cc), cups (8c, bb, and pistons (8c, aa) is to be used.

- (d) Assemble piston assembly (8c).
- (e) Assemble wheel cylinder assembly (8).
- (f) Assemble connector group (18, view A).
- (4) *Installation.*
 - (a) Install wheel cylinder assembly (8).



- 1—Retaining clip
- 2—Stop plate
- 3—Master cylinder piston assembly
 - A—Ring
 - B—Cup
 - C—Piston and protector assembly
- 4—Cylinder cup

- 5—Spring assembly
- 6—Check valve assembly
- 7—Valve seat
- 8—Master cylinder and plug assembly
- 9—Filler cap assembly
- 10—Gasket

ORD G55905

Figure 305. Disassembly and assembly of master cylinder assembly.

- (b) Install connector group (13, view A) and tube assemblies (14 and 15, view A).
- (c) Install wire rope assembly (12, view A) and secure with headed straight pin (11, view A).
- (d) Install brake shoes (13 and 18, fig. 310).
- (e) Compress spring (2, fig. 310) and engage wire rope assembly (1, fig. 310) to lever (6, fig. 310).
- (f) Install hub and brake drum group (8, fig. 309).
- (g) Install wheel and tire group (2, fig. 308) and remove automotive jack (4, fig. 308).
- (h) Close draincock (11, view A, fig. 295).
- (i) Perform brake bleed procedures as described in TM 9-1440-250-20/1.
- (j) Perform hydraulic brake adjust-

ment as described in TM 9-1440-250-20/1.

- (k) Perform parking brake adjustment as described in TM 9-1440-250-20/1.

f. Air Line Coupling.

Note. The key numbers shown in parentheses in (1) through (4) below refer to figure 312 unless otherwise indicated.

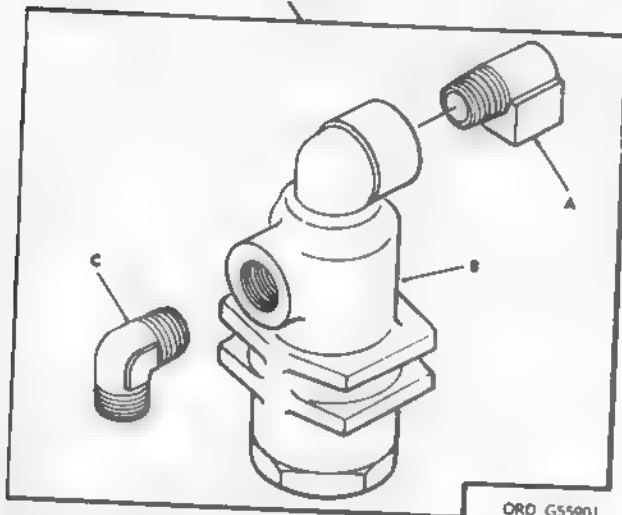
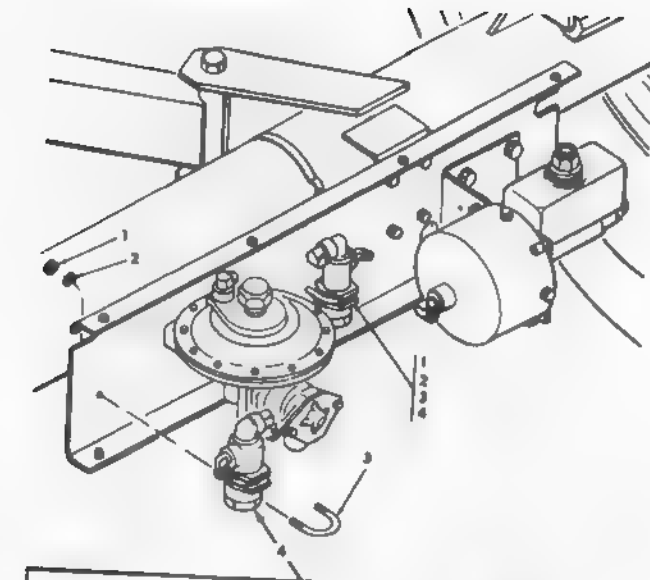
(1) Removal.

- (a) Disconnect air hose assembly (5) from prime mover and depressurize air system on axle (3, fig. 295) by opening draincock (11, fig. 295).
- (b) Remove adapter (1), reducer (2), and couplings (3 and 4).

(2) Disassembly. Disassemble coupling (3).

(3) Assembly.

- (a) Assemble ring (3d) in coupling body (3e).



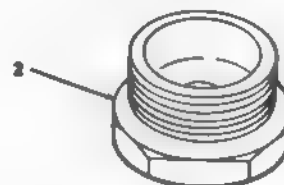
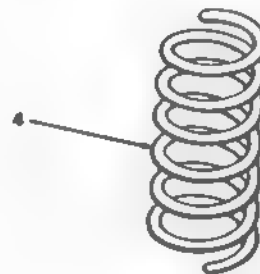
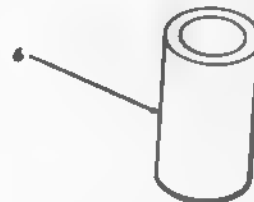
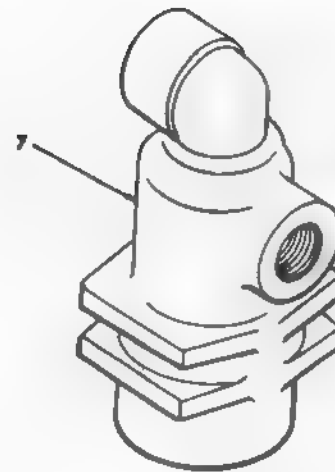
ORD G55901

- 1—1/4-20 hexagon nut (2)
- 2—1/4-inch lockwasher (2)
- 3—U-bolt
- 4—Air cleaner group
- A—Elbow 137423
- B—Elbow M920822-63
- C—Air cleaner assembly

Figure 306. Removal and installation of air cleaner group.

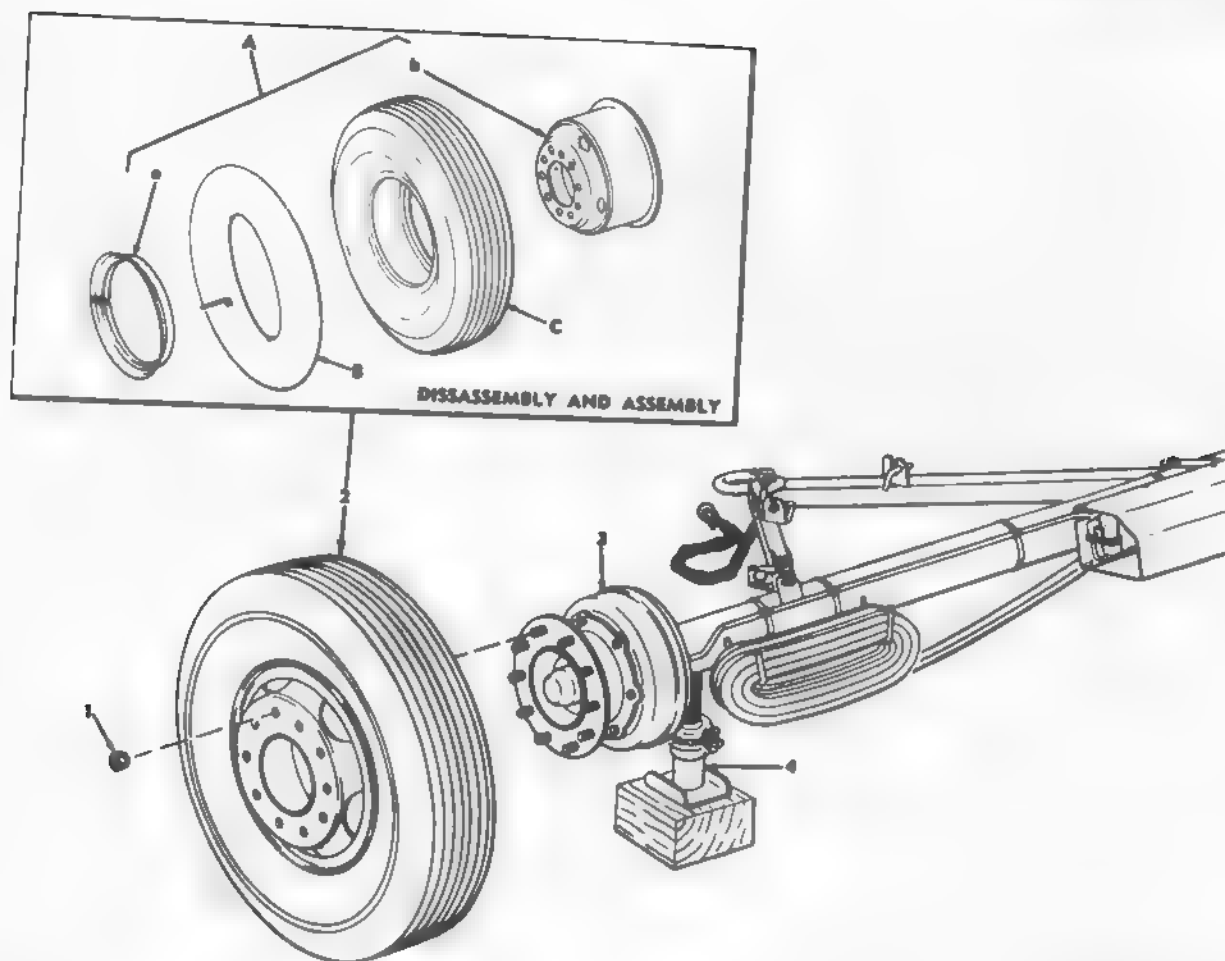
- 1—Plug
- 2—Nut
- 3—Gasket
- 4—Spring
- 5—Washer
- 6—Filter
- 7—Housing

Figure 307. Disassembly and assembly of air cleaner assembly—legend.



ORD G55902

Figure 307. Disassembly and assembly of air cleaner assembly.



1—3/4-16 hexagon nut 537803 (RH) (10)
or 537804 (LH) (10)

2—Wheel and tire group

A—Wheel assembly

a—Side ring

b—Wheel rim

B—Inner tube

C—Tire

3—Hub and brake drum group

4—Automotive jack

ORD G55907

Figure 308. Removal and installation of wheel and tire group.

(b) Assemble plunger (3c), spring (3b), and retainer (3a) into coupling body (3e).

(4) *Installation.*

(a) Install air line coupling (3) on mobile launcher axle (3, fig. 295) with reducer (2) and adapter (1).

(b) Install coupling (3) on air hose assembly (5).

(c) Connect hose assembly (5) to prime mover.

(d) Test brake system and adjust in accordance with procedures in TM 9-1440-250-20/1.

g. Cable Assembly.

Notes. The key numbers shown in parentheses in (1) and (2) below refer to figure 313.

(1) *Removal.*

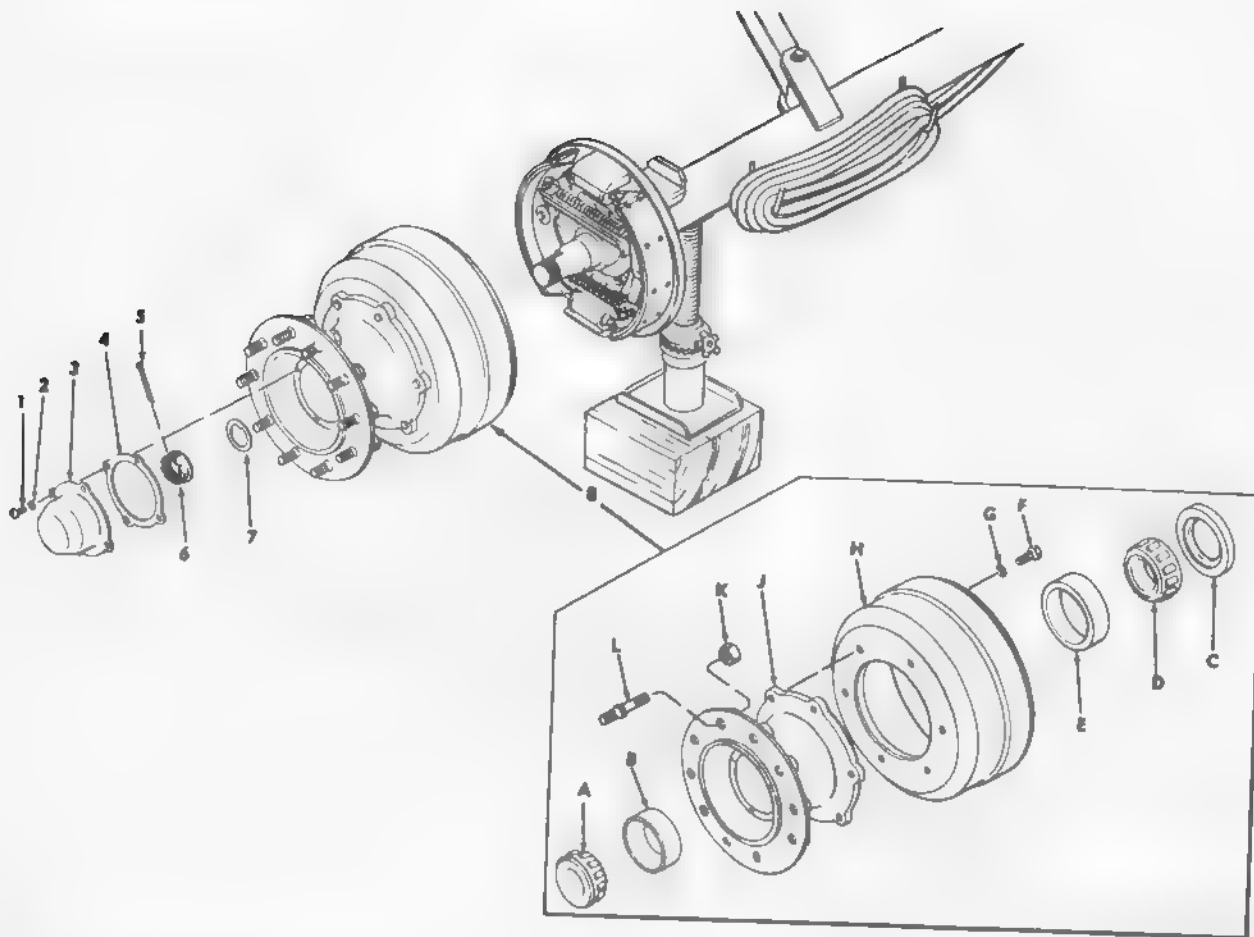
(a) Remove loop clamps (3 and 10).

(b) Remove cable assembly (4).

(2) *Installation.*

(a) Install cable assembly (4) on mobile launcher axle and secure with bracket (13) and loop clamp (10).

(b) Install cable assembly (4) on arms of axle and secure with loop clamps (8).



ORD G55908

- 1—3/8-16 x 1/2 drilled fillister-head screw (4)
- 2—3/8-inch lockwasher (4)
- 3—Cover plate
- 4—Gasket
- 5—1/4 x 3 1/2 cotter pin
- 6—Axle nut
- 7—Key washer
- 8—Hub and brake drum group
 - A—Cone
 - B—Cup
 - C—Seal

- D—Cone
- E—Cup
- F—1/2-20 x 1 1/4 bolt (6)
- G—1/2-inch lockwasher (6)
- H—Brake drum
- J—Hub
- K—3/4-16 hexagon nut (10)
- L—Stud 81919-12247 (RH) (10) or 81919-12248 (LH) (10)
- 9—Brake group

Figure 309. Removal and installation of hub and brake drum group.

h. Connecting Link.

- (1) *Removal.* Remove connecting link (8, fig. 313).
- (2) *Installation.* Install connecting link (8, fig. 313).

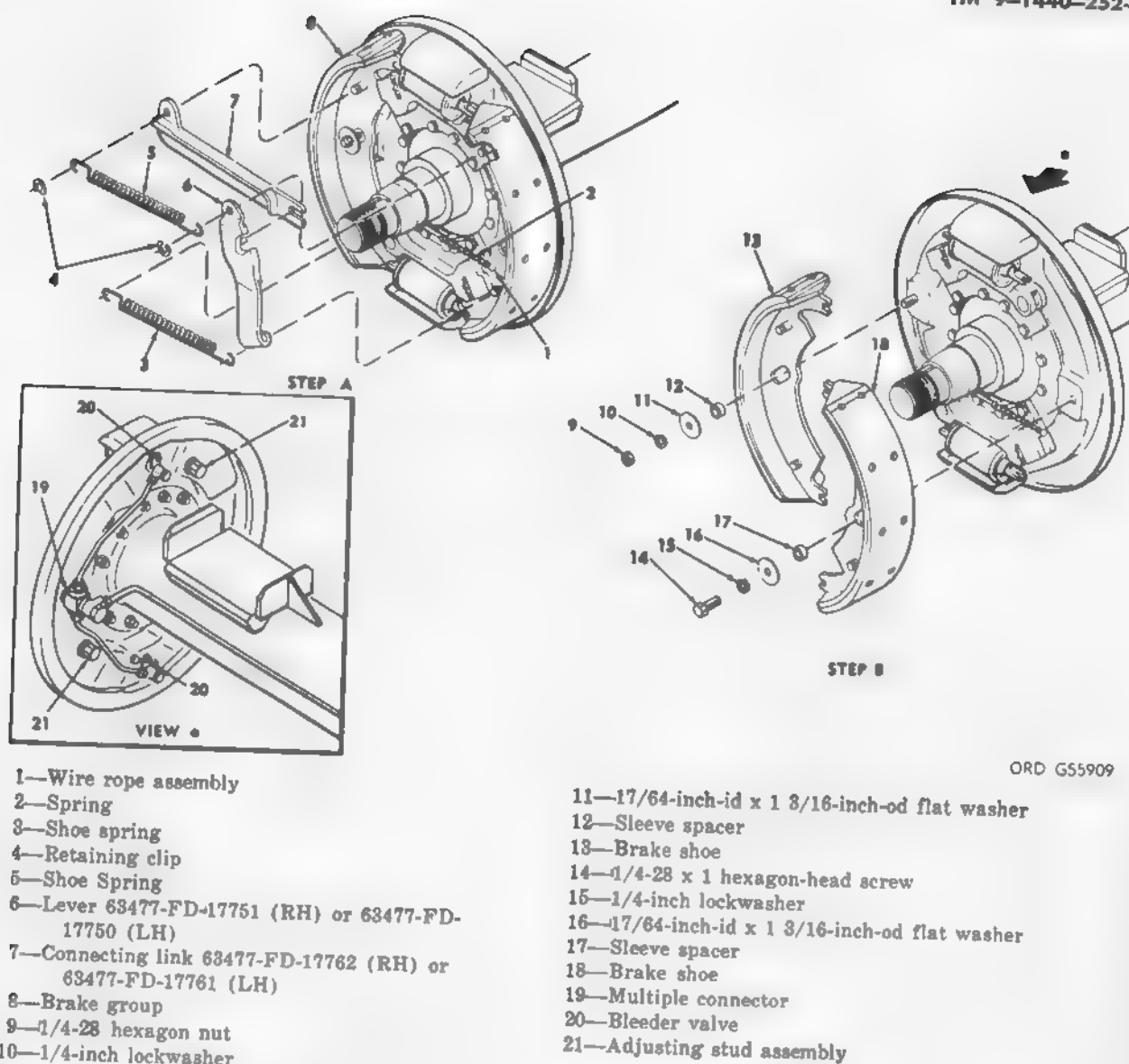
i. *Tiedown Linkage.* Remove and install tiedown linkage (8, fig. 5.1) as shown in TM 9-1440-250-12/2

208. Electrical Installation

Note. The key numbers shown in parentheses in a below refer to figure 314 unless otherwise indicated.

a. General.

- (1) The electrical installation (2, fig. 5.1) consists of two marker light assemblies (2B, fig. 5.1) and two stop



ORD G55909

Figure 310. Disassembly and assembly of brake group and wheel cylinder.

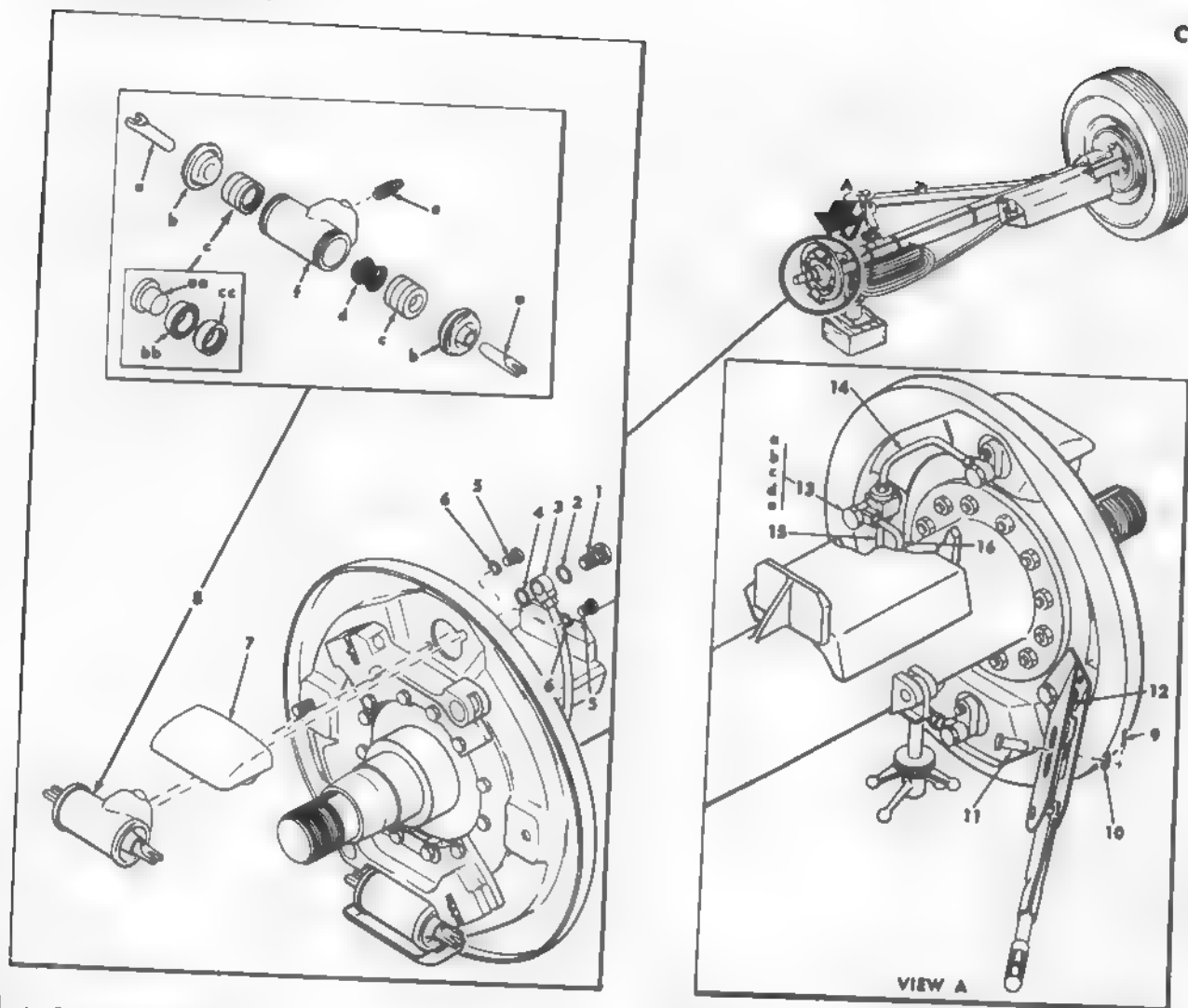
light-taillight assemblies (2A and 2C, fig. 5.1). During travel the marker light assemblies (1) and stop light-taillight assemblies (3 and 4) are installed on the HERCULES monorail launcher (2). When the HERCULES monorail launcher (1, fig. 5.3) is emplaced, the marker light assemblies (6) and stop light-taillight assemblies (5 and 7) are installed on the mobile launcher axle (8).

- (2) Perform maintenance on the marker light assemblies (1) and the stop light-taillight assemblies (3 and 4) as described in *b* and *c* below.

b. Marker Light Assembly.

- (1) *Removal.* Remove marker light assembly as shown in TM 9-1440-250-12/2.
- (2) *Disassembly.* Disassemble marker light assembly (fig. 315).

Note. The key numbers shown in parentheses in (3) below refer to figure 315 unless otherwise indicated.



ORD G55910

- 1—Fluid passage bolt
- 2—Gasket
- 3—Connector
- 4—Gasket
- 5—5/16-18 x 5/8 hexagon-head screw
- 6—5/16-inch lockwasher
- 7—Cover
- 8—Wheel cylinder assembly
 - a—Link
 - b—Boot
 - c—Piston
 - aa—Piston
 - bb—Cup
 - cc—Retainer
 - d—Spring

- e—Bleeder valve
- f—Cylinder
- 9—3/32 x 3/4 cotter pin
- 10—5/16-inch flat washer
- 11—0.306 x 1 21/64 headed straight pin
- 12—Wire rope assembly
- 13—Connector group
 - a—Fluid passage bolt
 - b—Gasket
 - c—Connector
 - d—Gasket
 - e—Multiple connector
- 14—Tube assembly 8733916
- 15—Tube assembly 8733918
- 16—Tube assembly 9021748

Figure 311. Disassembly and assembly of brake group and wheel cylinder—continued.

(3) Assembly.

- (a) Assemble blackout clearance light assembly (1) and clearance light assembly (2).
- (b) Connect wire 3100Q18 (fig. 316)

to clearance light assembly (2, fig. 316).

- (c) Connect wire 3101Q18 (fig. 316) to blackout clearance light assembly (3, fig. 316).

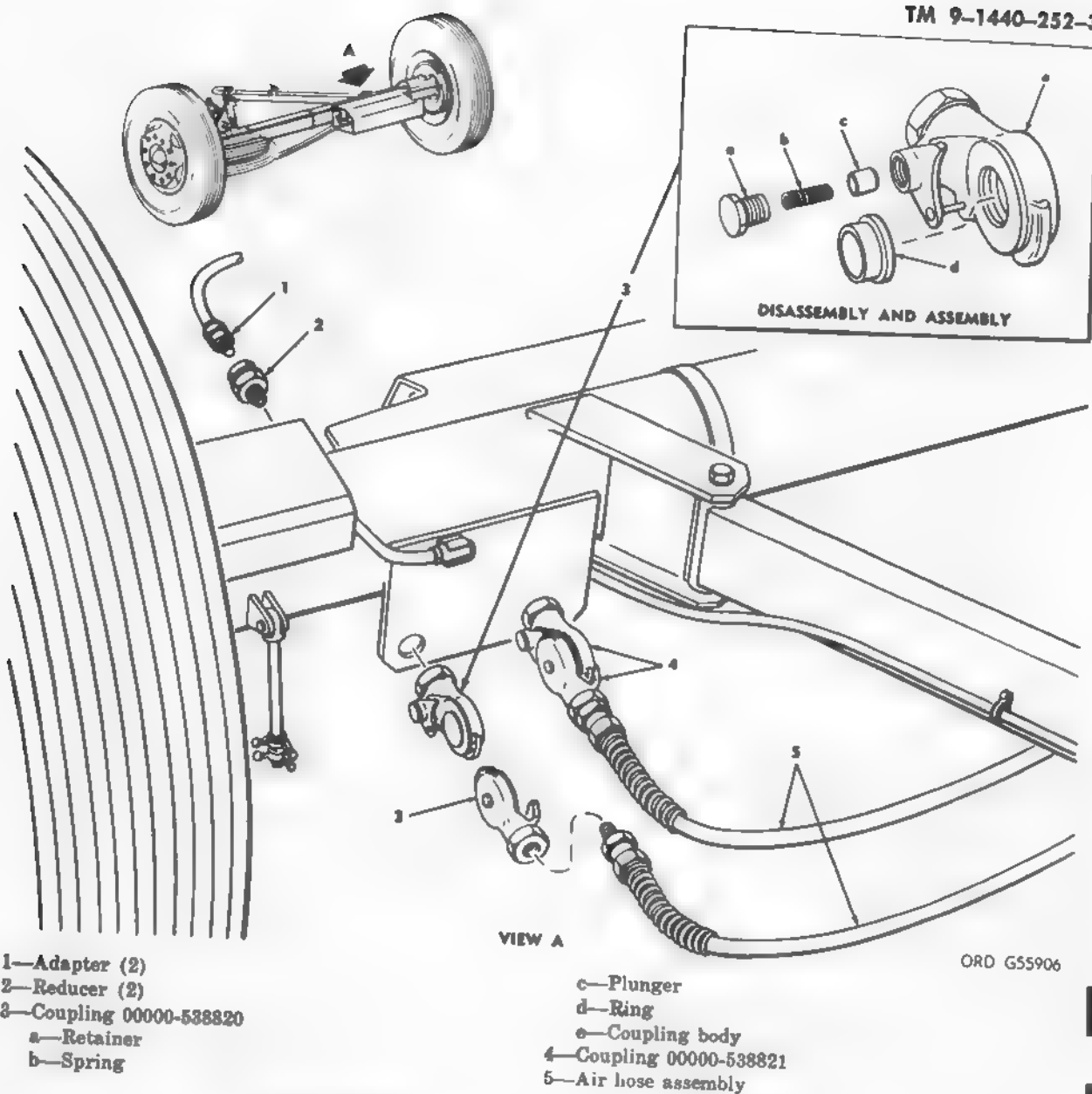
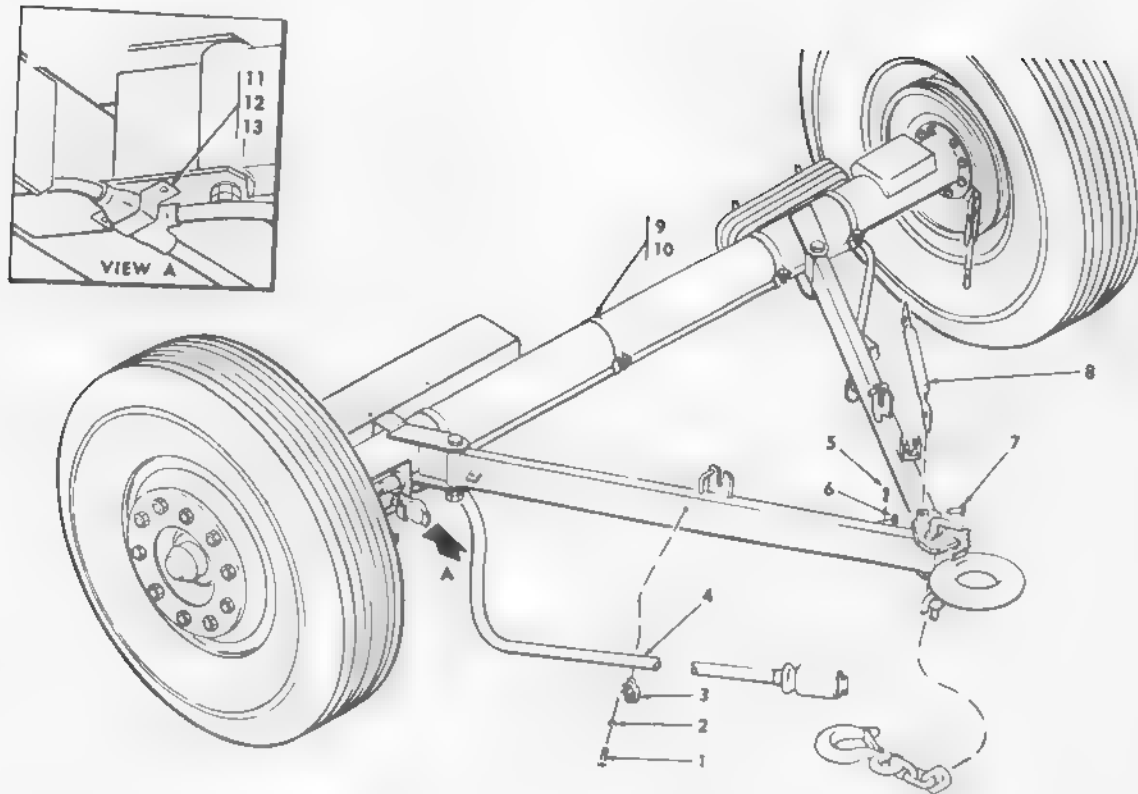


Figure 318. Removal and installation of air line coupling.

- (d) Clean and prepare the area of housing (17) where ground terminal (14) is secured to housing to insure adequate bond of ground terminal (14) and housing (17). Refer to TM 9-1400-250-15/3 for cleaning and preparation instructions.
 - (e) Install ground terminal (14) and reflector (16).
 - (f) Secure cable assembly (8) to base (5) with locknut (6).
 - (g) Install base (5).
 - (4) Install marker light assembly as shown in TM 9-1440-250-12/2.
- c. Stop Light-Taillight Assemblies.
- (1) Removal. Remove stop light-taillight assembly as shown in TM 9-1440-250-12/2.
 - (2) Disassembly. Disassemble stop light-taillight assembly (fig. 317).

Note. The key numbers shown in parentheses in (3) below refer to figure 317 unless otherwise indicated.



- 1—No. 10-32 x 3/6 rd-hd screw (3)
- 2—No. 10 lk washer MS35338-43 (3)
- 3—Loop clamp (3)
- 4—Cable assembly
- 5—8/32 x 3/4 cotter pin
- 6—0.406-in.-id fl washer
- 7—Straight pin

- 8—Connecting link
- 9—No. 10 external-teeth lk washer (4)
- 10—Loop clamp (4)
- 11—No. 10-32 x 1/4 pan-hd screw (2)
- 12—No. 10 lk washer MS35333-39 (2)
- 13—Bracket

ORD G55911

Figure 318. Connecting link and cable assembly—removal and installation.

(3) Assembly.

- (a) Assemble clearance light assembly (1) and blackout clearance light assembly (2).
- (b) Assemble reflector (11).
- (c) Clean and prepare the area of cabinet (24 or 27) where ground terminal (7 or 15, fig. 318) is secured, to insure adequate bond of ground terminal (7 or 15, fig. 318). Refer to TM 9-1400-250-15/3 for cleaning and preparation instructions.
- (d) Install ground terminal (7 or 15, fig. 318) and reflector (19).
- (e) Assemble stop light-tailight (13 or 25).
- (f) Secure cable assembly (20 or 26) to cabinet (24 or 27) with locknut (14).

- (g) Connect cable connections for the cable assembly (1 or 8, fig. 318).
- (h) Install the cover (12).

- (4) Installation. Install the stop light-tailight assembly as shown in TM 9-1440-250-12/2.

209. Kingpin Support

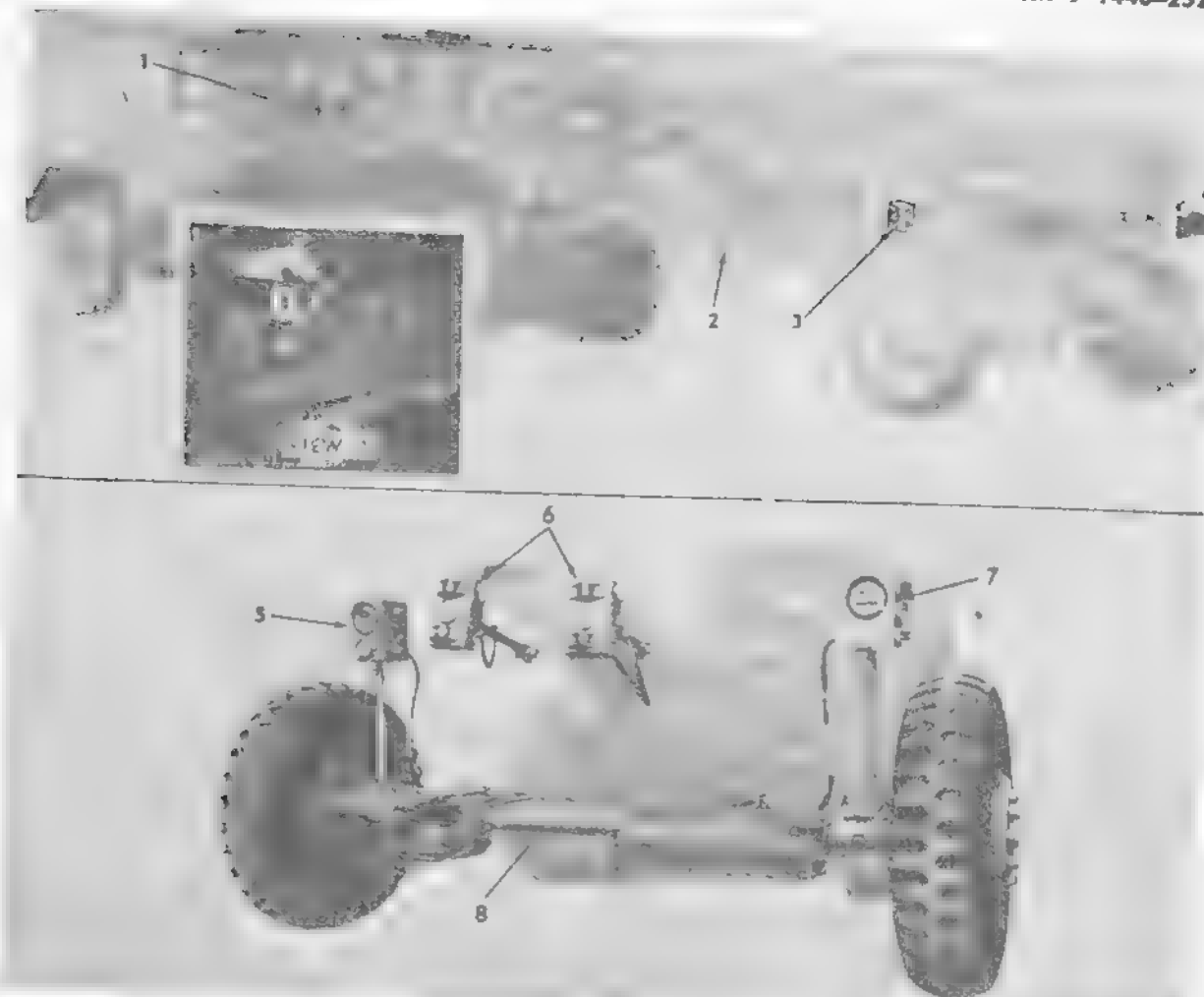
The kingpin support (3, fig. 5.1) adapts the launcher to enable it to be connected to a prime mover for travel. After travel, the kingpin support is stowed on the mobile launcher axle.

a. *Removal.* Remove the kingpin support as described in TM 9-1440-250-12/2.

b. *Disassembly.* Disassemble the kingpin support (fig. 318.1).

c. *Assembly.*

Note. The key numbers shown in parentheses in steps (1) through (3) below refer to figure 318.1.



ORD G55913

- 1—Marker light assembly
- 2—HERCULES monorail launcher
- 3—Stop light-tailight assembly
- 4—Stop light-tailight assembly

- 5—Stop light-tailight assembly
- 6—Marker light assembly
- 7—Stop light-tailight assembly
- 8—Mobile launcher axle

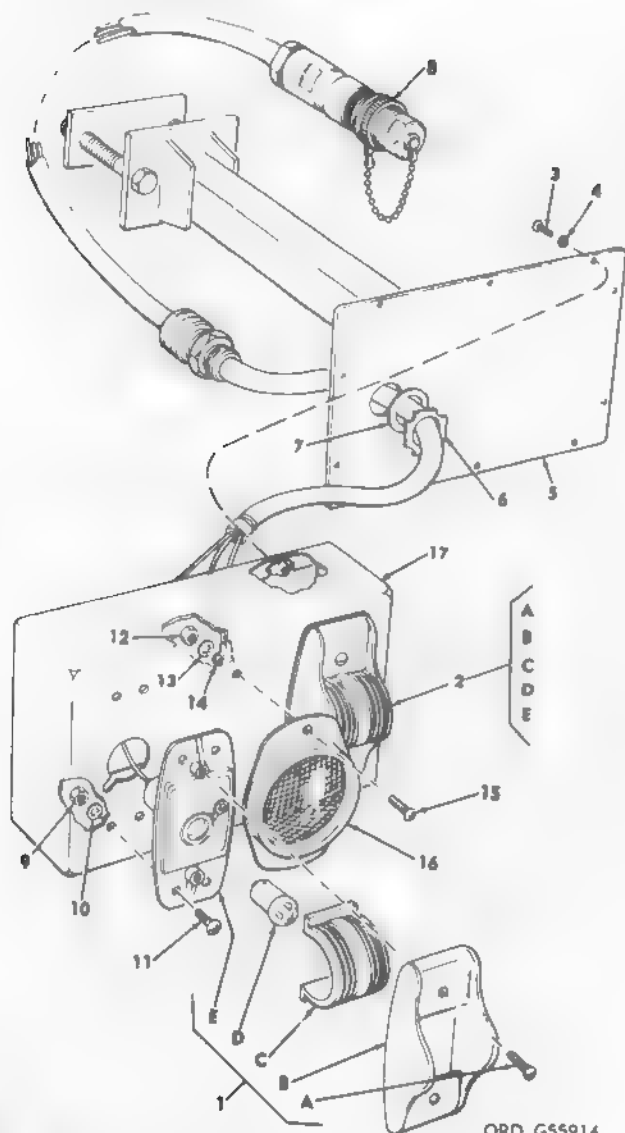
Figure 314. Location of marker light assemblies and stop light-tailight assemblies.

- (1) Install the guide (16) and the kingpin (15).
- (2) Install the cover plate (12) and the shock mount (14). Torque the hexagon-head bolts (7) and the cap screws (10) to 30-35 foot-pounds and

install the lock wire (6) on the hexagon-head bolts.

- (3) Install the springs (4), pins (3), and handles (2).

d Installation. Install the kingpin support as described in TM 9-1440-250-12/2.



- 8—Cable assembly
- 9—No. 10-32 self-locking hexagon nut (4)
- 10—No. 10 flat washer (4)
- 11—No. 10-32 x 1/2 round-head screw (4)
- 12—1/4-28 self-locking hexagon nut (2)
- 13—0.281-inch-id flat washer (2)
- 14—Ground terminal (part of cable assembly)
- 15—1/4-28 x 1/2 round-head screw (2)
- 16—Reflector
- 17—Housing

Figure 315. Disassembly and assembly of marker light assembly—continued—Legend.

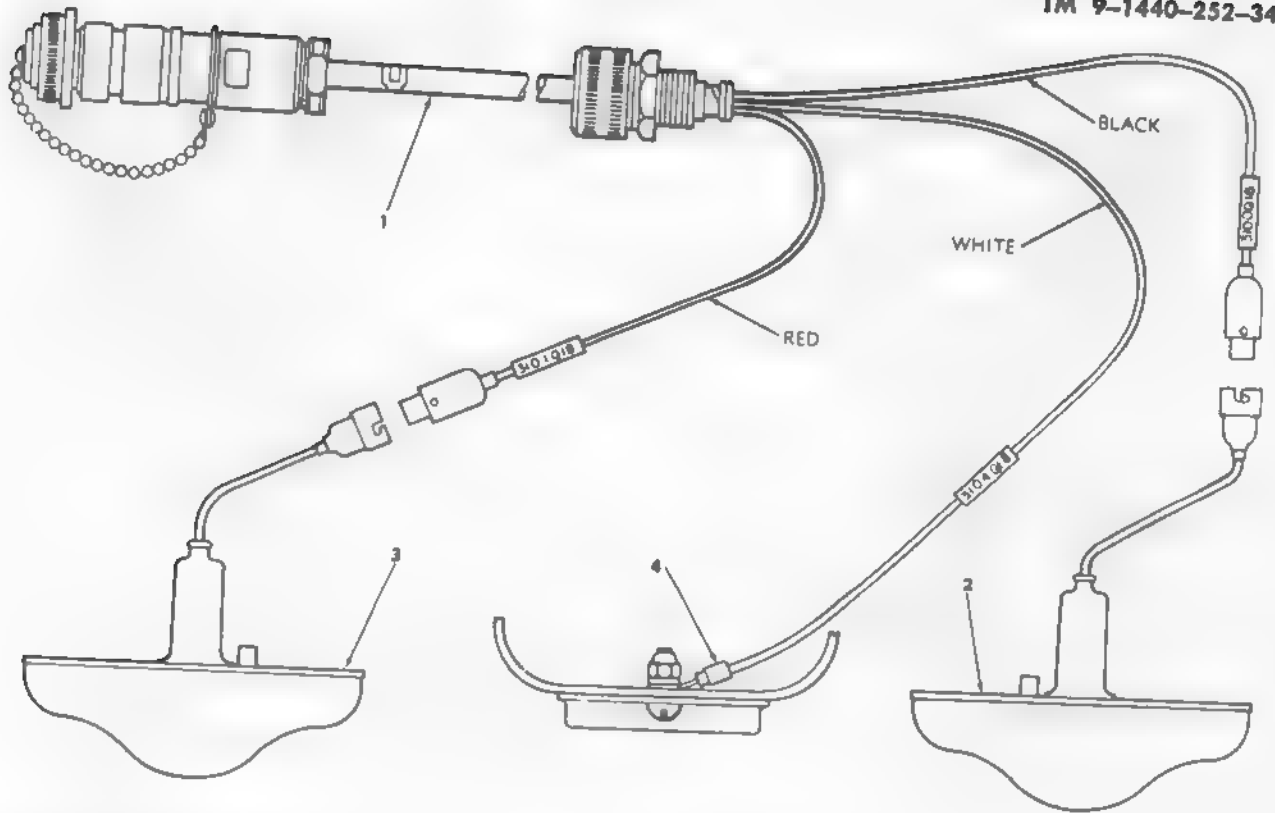
ORD G55914

- 1—Blackout clearance light assembly
 - A—No. 10-24 x 3/8 oval-head screw (2)
 - B—Lamp assembly door
 - C—Blackout lens
 - D—Incandescent lamp
 - E—Marker light group
- 2—Clearance light assembly
 - A—No. 10-24 x 3/8 oval-head screw (2)
 - B—Lamp assembly door
 - C—Lens
 - D—Incandescent lamp
 - E—Marker light group
- 3—No. 10-32 x 1/2 round-head screw (10)
- 4—No. 10 flat washer (10)
- 5—Base
- 6—Locknut
- 7—Synthetic rubber cork gasket

Figure 315. Disassembly and assembly of marker light assembly.

C17

TM 9-1440-252-34

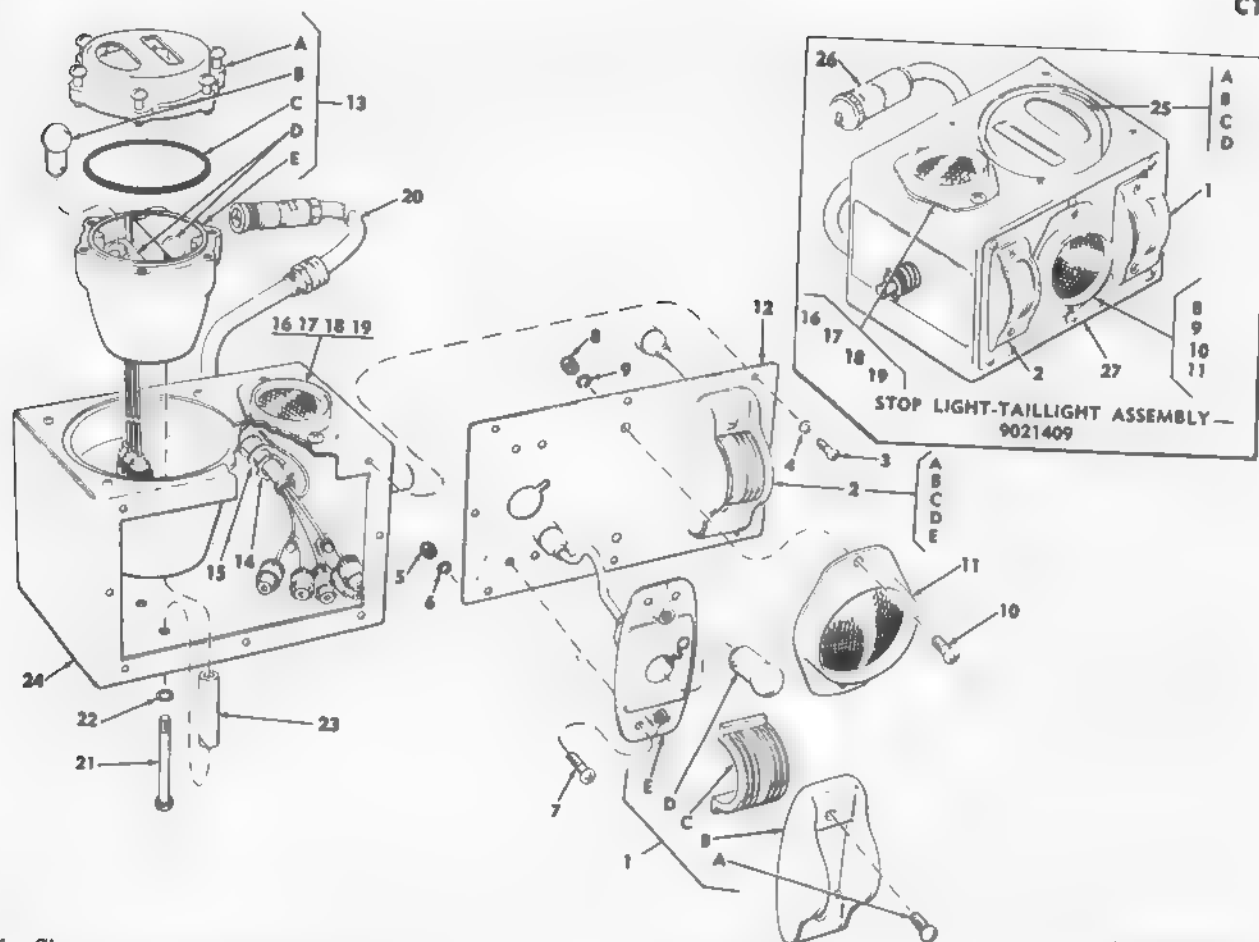


- 1—Cable assembly 9021572
- 2—Clearance light assembly
- 3—Blackout clearance light assembly

- 4—Ground terminal (part of cable assembly 9021572)

ORD G55918

Figure 316. Cable connections for marker light assembly.

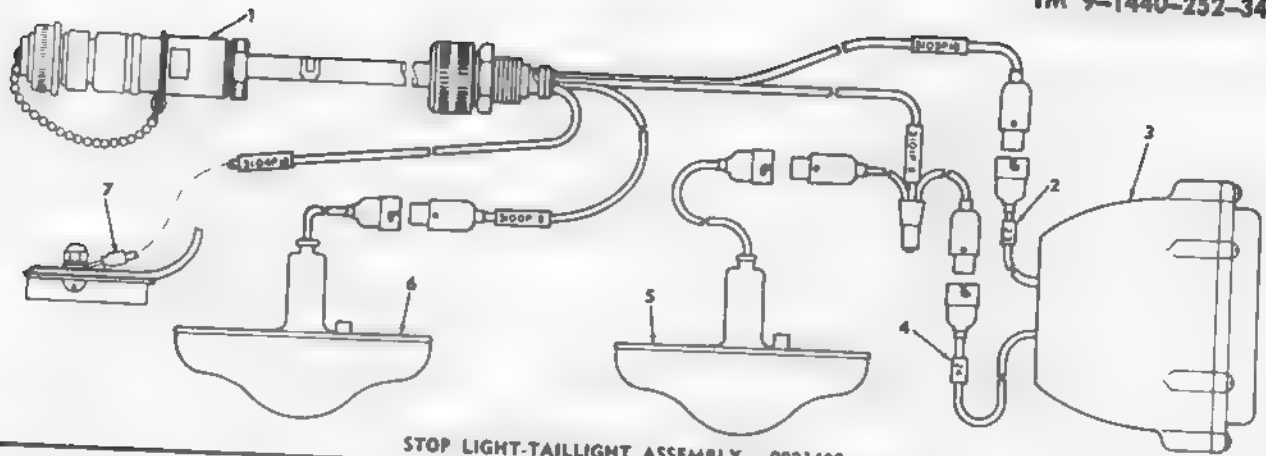


- 1—Clearance light assembly
 - A—No. 10-24 x 3/8 oval-head screw (2)
 - B—Lamp assembly door
 - C—Lens
 - D—Incandescent lamp
 - E—Lamp base group
- 2—Blackout clearance light assembly
 - A—No. 10-24 x 3/8 oval-head screw (2)
 - B—Lamp assembly door
 - C—Blackout lens
 - D—Incandescent lamp
 - E—Lamp base group
- 3—No. 10-32 x 1/2 round-head screw (8)
- 4—No. 10 flat washer (8)
- 5—No. 10-32 self-locking hexagon nut (8)
- 6—No. 10 flat washer (8)
- 7—No. 10-32 x 1/2 round-head screw (8)
- 8—1/4-28 self-locking hexagon nut (2)
- 9—0.281-inch-id flat washer (2)
- 10—1/4-28 x 1/2 round-head screw (2)
- 11—Reflector
- 12—Cover
- 13—Stop light-tailight

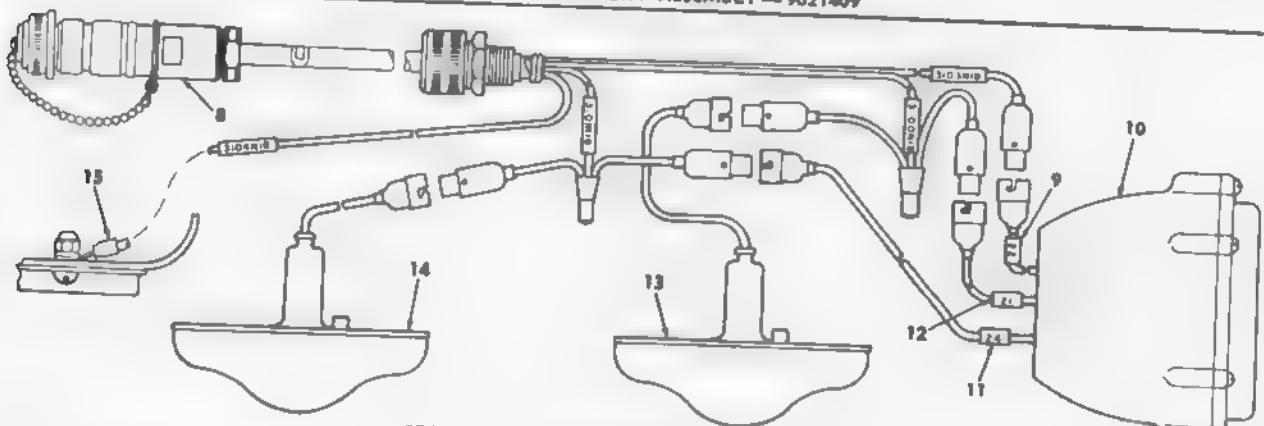
- A—Door
- B—Lamp MS35478-10
- C—Preformed packing
- D—Incandescent lamp
- E—Lamp 7525997
- 14—Locknut
- 15—Synthetic rubber and cork gasket
- 16—1/4-28 self-locking hexagon nut (2)
- 17—0.281-inch-id flat washer (2)
- 18—1/4-28 x 1/2 round-head screw (2)
- 19—Reflector
- 20—Cable assembly 9021455
- 21—3/8-16 x 3 hexagon-head cap screw (2)
- 22—3/8-inch lockwasher (2)
- 23—Sleeve spacer (2)
- 24—Cabinet
- 25—Stop light-tailight
 - A—Door
 - B—Preformed packing
 - C—Incandescent lamp (2)
 - D—Lamp base group
- 26—Cable assembly 9021473
- 27—Cabinet

ORD G55917

Figure 317. Disassembly and assembly of stop light-tailight assemblies 9021410 and 9021409.



STOP LIGHT-TAILLIGHT ASSEMBLY — 9021409

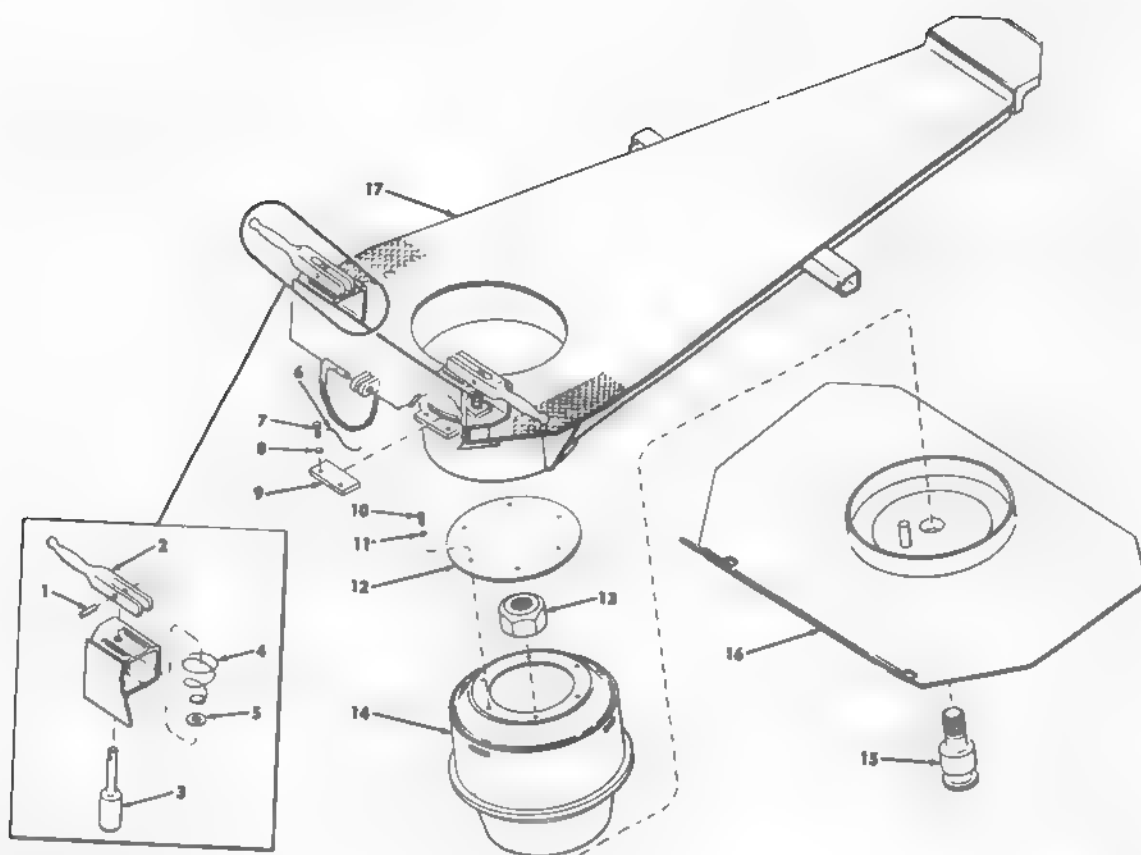


STOP LIGHT-TAILLIGHT ASSEMBLY — 9021410

ORD G55919

- | | |
|--|--|
| 1—Cable assembly 9021473 | 9—Service-stop band |
| 2—Blackout-stop band | 10—Stop light-taillight |
| 3—Stop light-taillight | 11—Blackout-tail band |
| 4—Blackout-tail band | 12—Service-tail band |
| 5—Blackout clearance light assembly | 13—Clearance light assembly |
| 6—Clearance light assembly | 14—Blackout clearance light assembly |
| 7—Ground terminal (part of cable assembly 9021473) | 15—Gnd terminal (part of cable assembly 9021455) |
| 8—Cable assembly 9021455 | |

Figure 318. Cable connections for stop light-taillight assemblies.



OKD G253886

- 1—0.250 x 1.250 spring pin (2)
- 2—Handle (2)
- 3—Pin (2)
- 4—Spring (2)
- 5—5/8 flat washer (2)
- 6—Lock wire
- 7—3/8-24 x 53/64 hex-hd bolt (6)
- 8—3/8 flat washer (6)
- 9—Machine key (3)

- 10—3/8-24 x 9/16 cap screw (6)
- 11—3/8 lockwasher (6)
- 12—Cover plate
- 13—1 3/4-12 x 1 3/16-thk self-lkg hex. nut
- 14—Shock mount
- 15—Kingpin
- 16—Guide
- 17—Support

Figure 318.1. Kingpin support—disassembly and assembly.

Section III. MAINTENANCE OF THE LAUNCHER FIELD MODIFICATION KIT

210. General

This section provides instructions for performing maintenance on the forward jacks, auxiliary jack, center jacks, outriggers, outrigger jacks, bracket assemblies, electrical test station, hydraulic test station, and loading rack clamp assemblies (fig. 5.3).

211. Forward and Auxiliary Jacks

Two forward jacks and one auxiliary jack

are used in the emplacement of the launcher. The procedures described in *a* through *d* below are for the maintenance of the forward and auxiliary jacks.

a. Removal. Remove the jacks as described in TM 9-1440-250-12/2.

Caution: Maintenance should be performed in as dust free an area as possible. Care should be exercised to prevent the entrance of any foreign matter into the hydraulic components of the jack.

b. Disassembly.

- (1) Drain and discard the hydraulic oil by extending the oil level indicator (12, fig. 318.2) to its fullest extent and inverting the jack.

Caution: Care should be exercised during removal of the cylinder head (5) to prevent damage to the head gasket (6).

- (2) Remove the cylinder head and the head gasket.
- (3) Remove and discard the preformed packing (7).
- (4) Remove the baffle (9) and the breather (10) from the cylinder head.
- (5) Remove the oil level indicator retainer (11) from the oil level indicator. Remove the indicator and remove and discard the preformed packing (13). Remove the tube vent (14).
- (6) Remove the chain assembly (15).
- (7) Remove the locking bar (18) by loosening the setscrew (16) enough to remove the hexagon-head bolt (17).
- (8) Remove the adapter (20) by loosening the two setscrews (19) and turning the adapter counterclockwise.
- (9) Remove the piston (21) by using the jack ram inserter (1, fig. 55.1). Exert a gentle force on the handle of the jack ram inserter and force the piston upward until it protrudes three inches above the top of the jack. Pull the piston the remaining distance to complete the removal.
- (10) Remove and retain the retaining ring (22, fig. 318.2) and the scraper ring (23).
- (11) Remove and discard the preformed packings (24 and 25).

Caution: When attempting to remove the locknut, observe the control valve sleeve to determine if it is beginning to turn. If this condition is noted, first remove the valve retaining screws and then remove the locknut. This operation will prevent shearing the screws.

- (12) Remove the relief valve (1, fig. 318.3), control valve (9), and hydraulic pump (13).

- (13) Remove and discard the preformed packings (2, 10 and 14).

- (14) Disassemble the relief valve (fig. 318.4), control valve (fig. 318.5), and hydraulic pump (fig. 318.6).

c. Assembly.

Caution: Dip new preformed packings in clean hydraulic oil before installation.

Note. Replace old preformed packings with new packings.

Note. To prevent probable damage to the preformed packing (12, fig. 318.5), the slide (11) should be inserted into the sleeve (9) before installing the packing.

- (1) Assemble the hydraulic pump (fig. 318.6), control valve (fig. 318.5), and relief valve (fig. 318.4).
- (2) Install the preformed packings (14, fig. 318.3) on the hydraulic pump (13) and the preformed packings (10) on the control valve (9).
- (3) Install the hydraulic pump and the control valve.
- (4) Install the preformed packings (2) on the relief valve (1).
- (5) Install the relief valve.
- (6) Install the preformed packings (24 and 25, fig. 318.2).
- (7) Install the retaining ring (22) and the scraper ring (23).
- (8) Coat the piston (21) lightly with clean hydraulic oil. Install the piston into the cylinder of the jack by using the handle of the jack ram inserter (1, fig. 55.1).
- (9) Install the adapter (20, fig. 318.2) and tighten the two setscrews (19).
- (10) Install the locking bar (18) by installing the hexagon-head bolt (17) and tightening the setscrew (16).
- (11) Install the chain assembly (15).
- (12) Install the tube vent (14). Install the preformed packing (13) and the oil level indicator (12) on the cylinder head (5), and install the oil level indicator retainer (11) on the indicator.
- (13) Install the breather (10) and the baffle (9) on the cylinder head.
- (14) Install the preformed packing (7) on the cylinder head.
- (15) Install the cylinder head and the head gasket (6). Torque the hexagon-head

bolts (1) to 300 pound-inches, and the hexagon-head bolts (3) to 120 pound-inches.

- (16) Extend the oil level indicator to its fullest extent and refill the jack with MIL-H-5606 hydraulic oil only. Replace the indicator.

d. Installation. Install the jacks as outlined in TM 9-1440-250-12/2.

212. Center Jacks

Two center jacks are used in the emplacement of the launcher. The procedures outlined in *a* through *d* below are for the maintenance of the center jacks.

a. Removal. Remove the jacks as outlined in TM 9-1440-250-12/2.

Caution: Maintenance should be performed in as dust free an area as possible. Care should be exercised to prevent the entrance of any foreign matter into the hydraulic components of the jack.

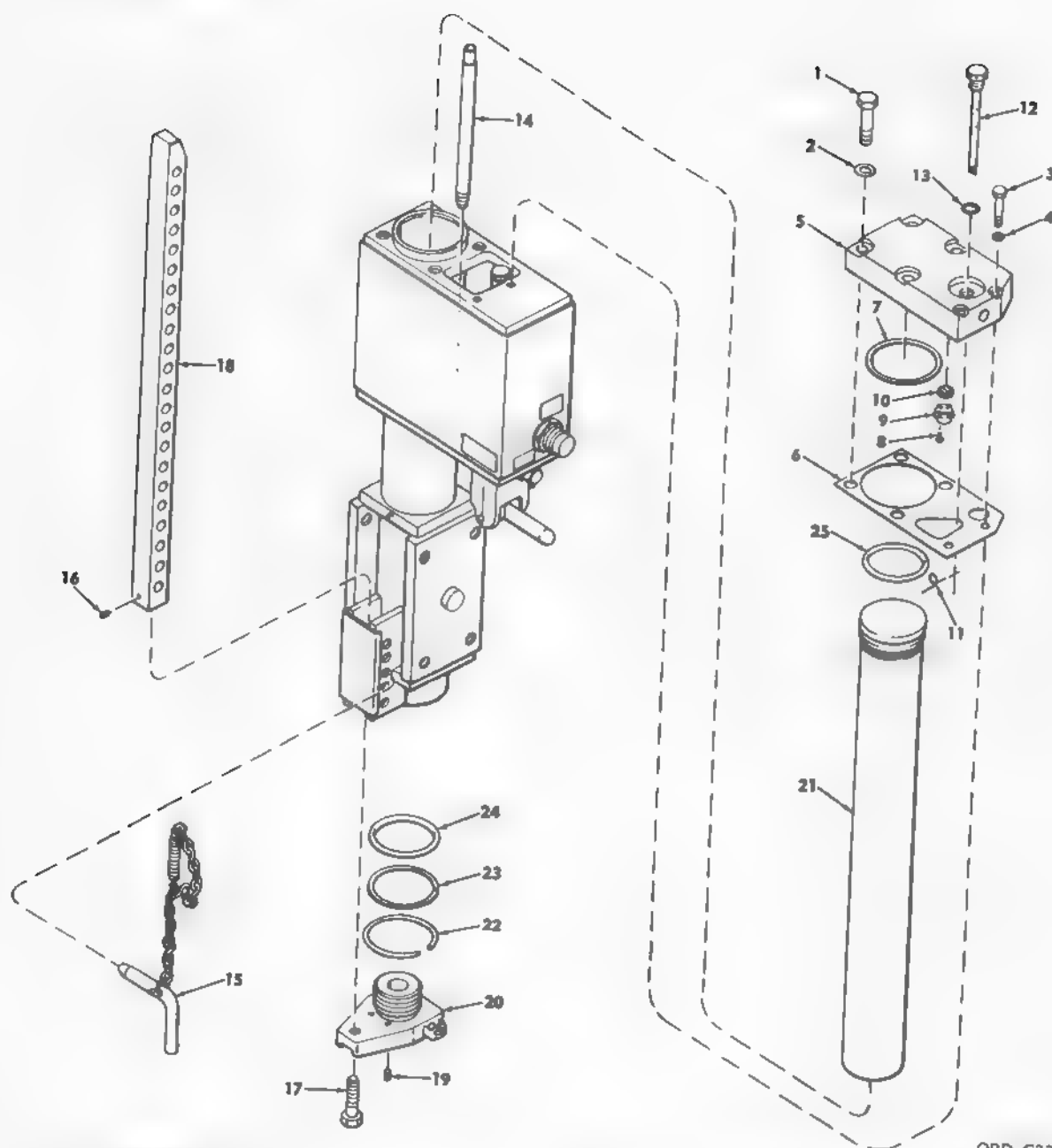
b. Disassembly.

Note. The key numbers shown in parenthesis in steps (1) through (6) below refer to figure 318.7.

- (1) Drain and discard the hydraulic oil by extending the oil level indicator (5) to its fullest extent and inverting the jack.

Caution: Care should be exercised during removal of the cover plate (2) to prevent damage to the gasket (3).

- (2) Remove the cover plate and the gasket.
- (3) Remove the oil level indicator retainer (4) from the oil level indicator. Remove the indicator, and remove and discard the preformed packing (6). Remove the baffle (8) and the breather (9).
- (4) Disconnect and remove the tube assembly (10) and the elbow (11).

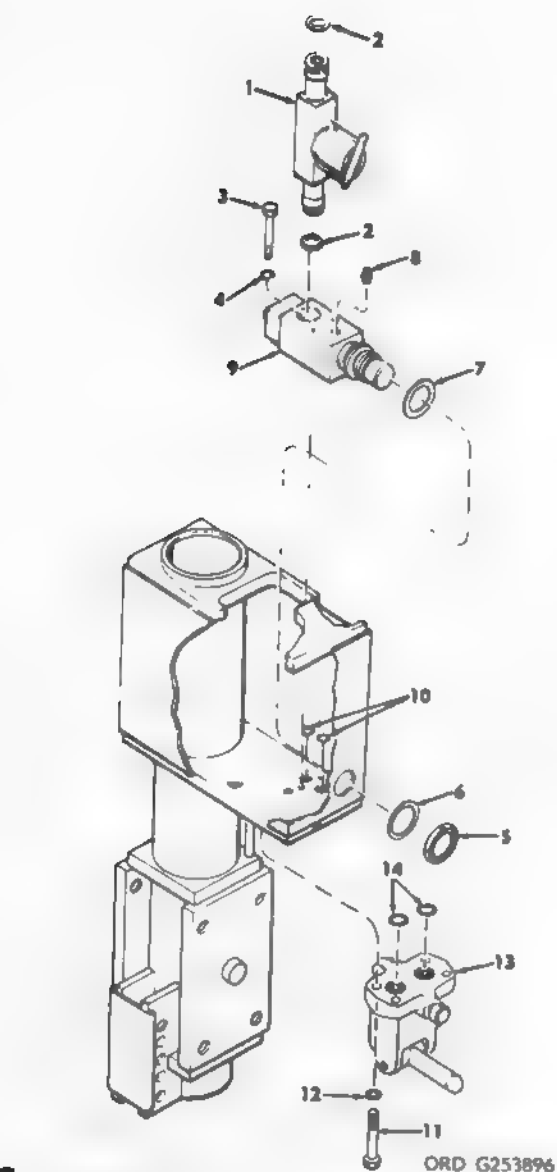


ORD G3390511

- 1- $\frac{1}{2}$ - 18 x $2\frac{1}{4}$ hex-hd bolt (4)
- 2- $\frac{1}{16}$ -in-id fl washer (4)
- 3- $\frac{1}{16}$ - 24 x $1\frac{15}{32}$ hex-hd bolt (2)
- 4- $\frac{1}{16}$ -in-id fl washer (2)
- 5-Cylinder head
- 6-Head gasket
- 7- $3\frac{3}{4}$ id x 0.139 thk preformed packing
- 8-No. 00 x $\frac{1}{16}$ rd-hd dr screw (2)
- 9-Baffle
- 10-Breather
- 11-Oil level indicator retainer (p/o oil level indicator)
- 12-Oil level indicator
- 13-0.755 id x 0.097 thk preformed packing

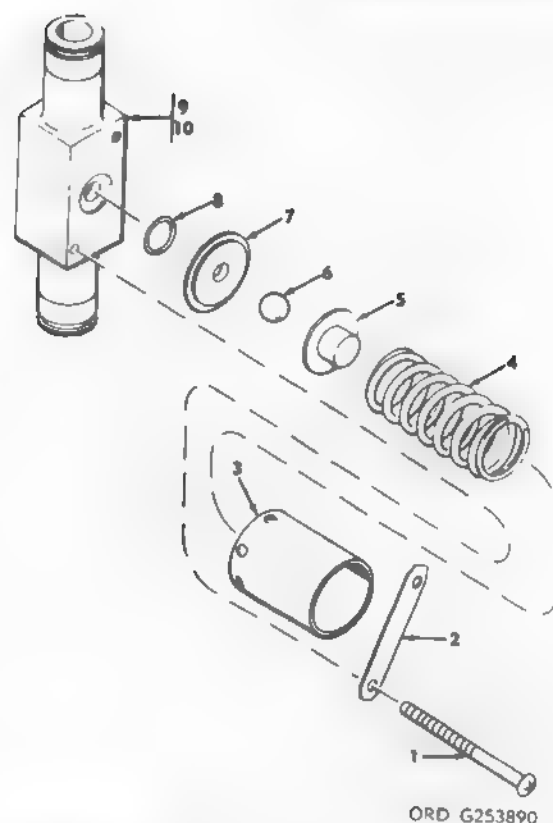
- 14-Tube vent
- 15-Chain assy
- 16- $\frac{1}{16}$ - 24 x $\frac{1}{8}$ cone-pt setscrew
- 17- $\frac{1}{2}$ - 20 x $1\frac{15}{32}$ hex-hd bolt
- 18-Locking bar
- 19- $\frac{1}{16}$ - 24 x $\frac{1}{8}$ cone-pt setscrew
- 20-Adapter
- 21-Piston
- 22-Retaining ring
- 23- $3\frac{1}{4}$ in-od scraper ring
- 24- $3\frac{3}{4}$ id x 0.210 thk preformed packing
- 25- $3\frac{3}{4}$ id x 0.210 thk preformed packing

Figure 318.2. Forward and auxiliary jacks—disassembly and assembly.



- 1—Relief valve
- 2—Preformed packing AN6227-15
- 3—No. 10-32 x 2/32 hex-hd bolt (2)
- 4—No. 10 lk washer (2)
- 5—1 7/16-18 hex. coupling nut
- 6—1 15/32-id x 2-od fl washer
- 7—Gasket
- 8—Plug
- 9—Control valve
- 10—Preformed packing
- 11—5/16-24 x 1 3/32 hex-hd bolt (4)
- 12—5/16 int-teeth lk washer (4)
- 13—Hydraulic pump
- 14—Preformed packing

Figure 318.3. Forward, auxiliary, and outrigger jacks—disassembly and assembly—continued.

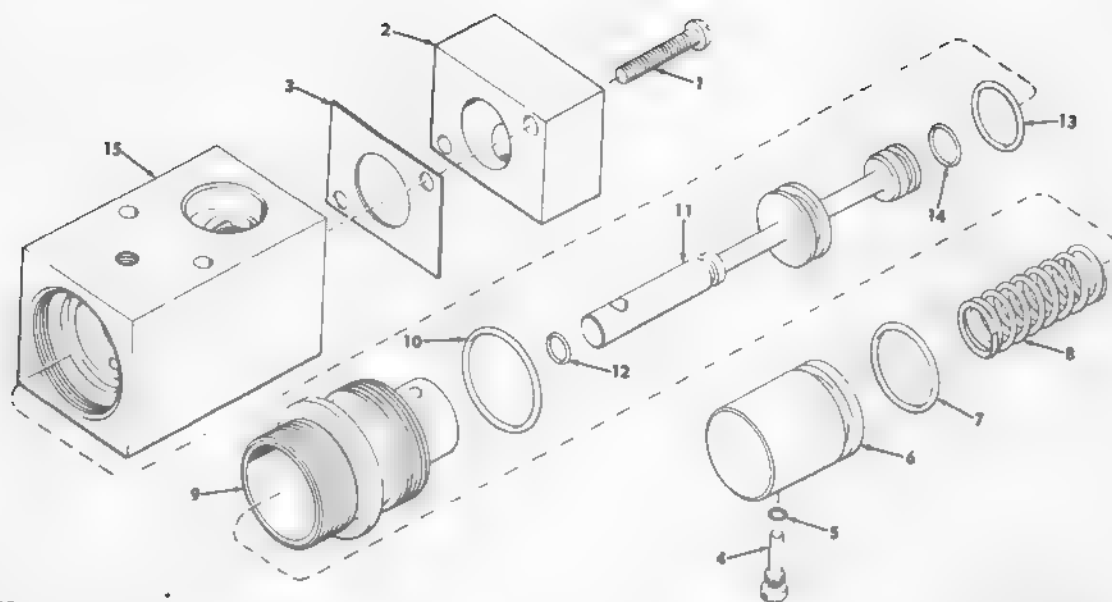


- 1—No. 10-32 x 3 rd-hd screw
- 2—Plate
- 3—Guide
- 4—Spring
- 5—Guide
- 6—Ball
- 7—Seat
- 8—Preformed packing
- 9—Manifold 9152504¹
- 10—Manifold 9152509²

¹ Component of valve 9152506.

² Component of valve 9152499.

Figure 318.4. Relief valve—disassembly and assembly.



ORD G253891

- 1—No. 10-32 x 1 1/4 rd-hd screw
- 2—Cap
- 3—Gasket
- 4—1/4-28 x 0.937 cham-hd screw
- 5—Preformed packing AN6227-2
- 6—Pushbutton
- 7—Preformed packing AN6227-19
- 8—Spring

- 9—Sleeve
- 10—Preformed packing AN6227-21
- 11—Slide
- 12—Preformed packing AN6227-6
- 13—Preformed packing AN6227-15
- 14—Preformed packing AN6227-9
- 15—Body

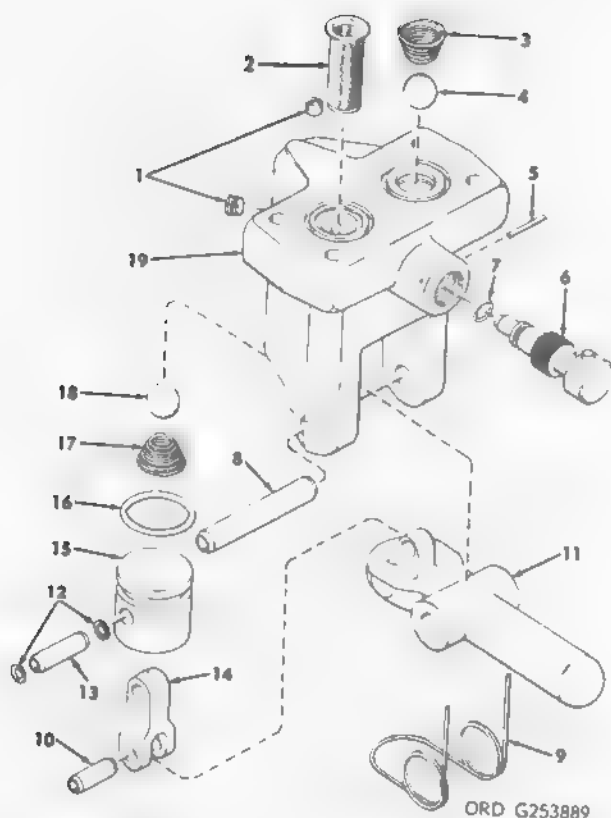
Figure 318.5. Control valve—disassembly and assembly.

- (5) Remove the reservoir end plug (15) and the tubes (16) and (17).
- (6) Remove and discard the preformed packing (19).

Note. The key numbers shown in parentheses in steps (7) through (21) below refer to figure 318.8 unless otherwise indicated.

- (7) Pull the adapter (1) until the second stage ram (22) extends six inches from the lower end of the jack. Using strap wrench FSN 5120-262-8491 around the extended portion of the ram so that it will resist counterclockwise motion, remove the adapter by turning it counterclockwise.
- (8) Remove and discard the preformed packing (2).
- (9) Remove the clamp (6) and the chain assembly (7).
- (10) Remove the locking bar (10) by loosening the setscrew (8) enough to remove the hexagon-head bolt (9).

- (11) Pull the ring (11) until the first stage ram (23) extends six inches from the lower end of the jack. Using a strap wrench around the extended portion of the ram so that it will resist counterclockwise motion, remove the ring by turning it counterclockwise.
- (12) Install the jack ram inserter (3, fig. 55.1) on the second stage ram and install the thread protector (7, fig. 55.1) using the spanner wrench (4, fig. 55.1). Exert a gentle force on the protruding end of the jack ram inserter until the piston (17), first stage ram, and second stage ram protrude three inches above the jack. Remove the piston and rams as a unit.
- (13) Remove and discard the preformed packing (12).
- (14) Remove and retain the retaining ring (13) and the scraper ring (14).
- (15) Place a strap wrench around the first stage ram (23) so that it will resist



- 1 — 1/8-in -id plug
- 2 — Filter
- 3 — Spring 9153949
- 4 — Ball
- 5 — 0.094 x 0.750 spring pin
- 6 — Stem
- 7 — Preformed packing AN6227-6
- 8 — 0.375 x 2.750 spring pin
- 9 — Spring 9153960
- 10 — 0.312 x 0.875 spring pin
- 11 — Handle
- 12 — No. 4 fl washer
- 13 — 0.312 x 1 spring pin
- 14 — Link
- 15 — Piston
- 16 — Preformed packing AN6227-18
- 17 — Spring 9153949
- 18 — Ball
- 19 — Body

Figure 318.6. Hydraulic pump — disassembly and assembly.

counterclockwise motion. Remove the piston (17) and tube (16) from the ram by turning the spanner wrench counterclockwise.

- (16) Remove the tube from the piston by removing the straight pin (15).
- (17) Remove the thread protector (7, fig. 55.1) from the first stage ram (23).

- (18) Remove and discard the preformed packings (18, 19, 20, and 21).
- (19) Remove the rams (22 and 23).
- (20) Remove and discard the preformed packings (24, 25, and 26).
- (21) Remove and retain the retaining ring (27) and the scraper ring (28).
- (22) Remove the clip (1, fig. 318.9), relief valve (2), control valve (9), and hydraulic pump (13).
- (23) Remove and discard the preformed packings (3, 10, and 14).
- (24) Disassemble the relief valve (fig. 318.4), control valve (fig. 318.5), and hydraulic pump (fig. 318.6).

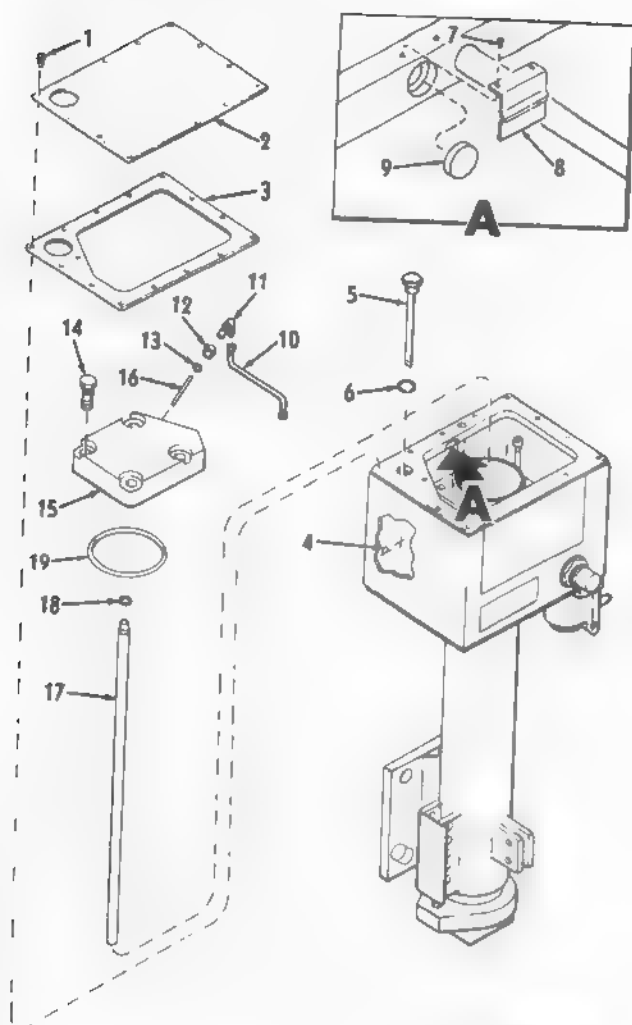
c. Assembly.

Caution: Dip new preformed packings in clean hydraulic oil before installation.

Note. Replace old preformed packings with new packings.

Note. To prevent probable damage to the preformed packing (12, fig. 318.5), the slide (11) should be inserted into the sleeve (9) before installing the packing.

- (1) Assemble the hydraulic pump (fig. 318.6), control valve (fig. 318.5), and relief valve (fig. 318.4).
- (2) Install the preformed packings (14, fig. 318.9) on the hydraulic pump (13) and the preformed packings (10) on control valve (9).
- (3) Install the tube nipple (8).
- (4) Install the hydraulic pump and the control valve.
- (5) Install the preformed packings (3) on the relief valve (2).
- (6) Install the relief valve and the clip (1).
- (7) Install the preformed packings (25 and 26, fig. 318.8) on the second stage ram (22) and install the preformed packing (24) in the groove on the lower end of the first stage ram (23).
- (8) Coat the interior of the first stage ram and the exterior of the second stage ram lightly with hydraulic oil.
- (9) Install the jack ram inserter (3, fig. 55.1) on the second stage ram, and insert the second stage ram into the



ORD G292294

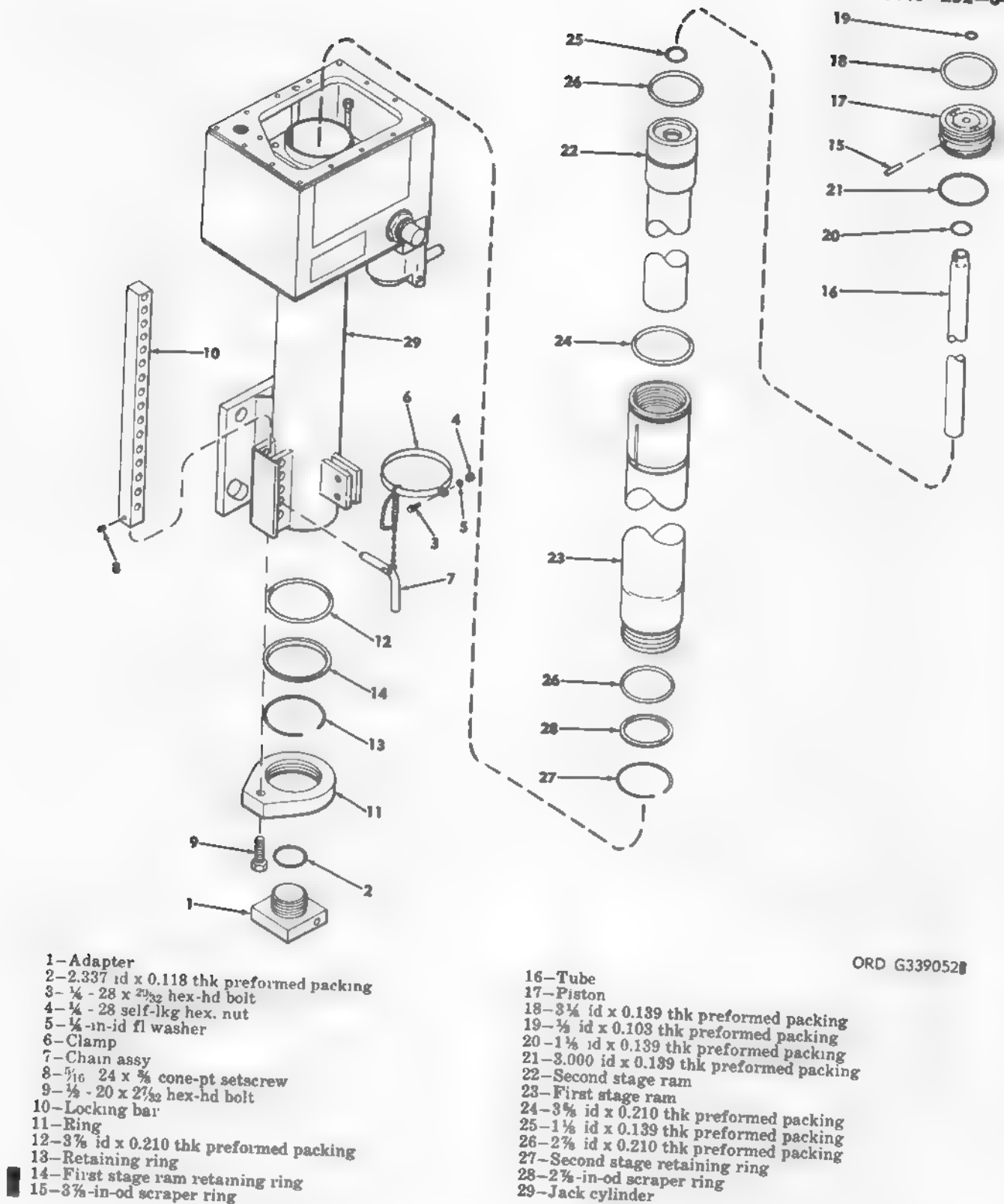
- 1—No. 10-32 x $\frac{1}{16}$ fl-hd screw (15)
- 2—Cover plate
- 3—Gasket
- 4—Oil level indicator retainer 9153625 (p/o oil level indicator 9153628)
- 5—Oil level indicator 9153628
- 6—Preformed packing MS28778-10
- 7—No. 00 x $\frac{1}{16}$ rd-hd dr screw (2)
- 8—Baffle
- 9—Breather
- 10—Tube assembly
- 11— $\frac{1}{4}$ -in-id elbow
- 12— $\frac{1}{16}$ -20 hex. nut
- 13—Preformed packing MS28778-4
- 14— $\frac{1}{4}$ -18 x 2 hex-hd cap screw (4)
- 15—Reservoir end plug
- 16—Tube 9152572
- 17—Tube 9152573
- 18—Preformed packing AN6227-10
- 19—Preformed packing AN6227-51

Figure 318.7. Center jack—disassembly and assembly.

first stage ram. Grasp the handle of the jack ram inserter and carefully pull the second stage ram until it

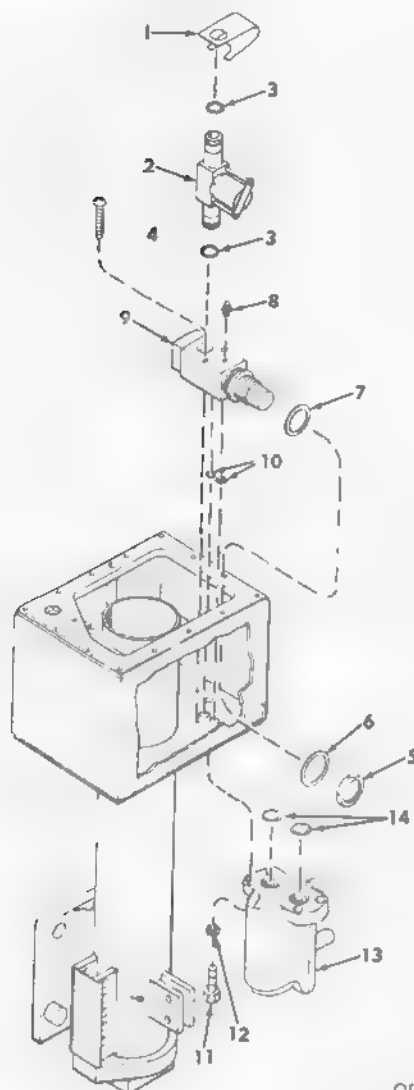
protrudes six inches from the first stage ram.

- (10) Install the retaining ring (27, fig. 318.8), and the scraper ring (28).
 - (11) Install the preformed packings (21, 20, 19, and 18) on the piston (17).
 - (12) Install the tube (16) in the bottom of the piston and line up the holes in the tube and the piston so that the straight pin (15) can be installed. Coat the tube and piston lightly with clean hydraulic oil.
- Caution:** During this operation, make certain that the straight pin does not drop out.
- (13) Install the assembled piston and tube into the first stage ram by turning clockwise. Secure firmly using the spanner wrench and the strap wrench in combination.
 - (14) Install the preformed packing (12) in the lower end of the jack cylinder (29).
 - (15) Coat the exterior of the first stage ram and the interior of the jack cylinder lightly with clean hydraulic oil.
 - (16) Install the thread protector (7, fig. 55.1) on the first stage ram using the spanner wrench.
 - (17) Install the assembled rams and piston in the jack cylinder by gently pulling on the jack ram inserter until the first stage ram protrudes six inches from the bottom of the jack cylinder. Remove the thread protector and the jack ram inserter.
 - (18) Install the retaining ring (18, fig. 318.8) scraper ring (14).
 - (19) Install and secure the ring (11) on the first stage ram.
 - (20) Install the locking bar (10) by installing the hexagon head bolt (9) and securing with the setscrew (8). Use the shim (6, fig. 55.1) to correctly space the distance between the ring and the locking bar.
 - (21) Install the chain assembly (7, fig. 318.8) on the clamp (6) and install the clamp.
 - (22) Install the preformed packing (2) on the adapter (1).



ORD G339052

Figure 318.8. Center jack—disassembly and assembly—Continued.



ORD G253888

- 1-Chip
- 2-Relief valve
- 3- $\frac{3}{16}$ id x 0.139 thk preformed packing
- 4-No. 10-32 x 2 $\frac{1}{2}$ rd-hd screw (2)
- 5-1 $\frac{7}{16}$ -18 hex. coupling nut
- 6-1 $\frac{1}{8}$ id x 2-od fl washer
- 7-Gasket
- 8- $\frac{1}{2}$ -in str tube nipple
- 9-Control valve
- 10- $\frac{3}{16}$ id x 0.103 thk preformed packing
- 11- $\frac{1}{4}$ -24 x 1 $\frac{3}{8}$ hex-hd bolt (4)
- 12- $\frac{3}{16}$ int-teeth lk washer (4)
- 13-Hydraulic pump
- 14- $\frac{3}{8}$ id x 0.139 thk preformed packing

Figure 318.9. Center jack—disassembly and assembly—Continued.

- (23) Install and secure the adapter on the second stage ram.
- (24) Install the preformed packing (19, fig. 318.7) in the groove on the reservoir end plug (15). Coat the exterior

of the tubes (16 and 17) and the underside of the end plug lightly with hydraulic oil and install in the jack. Torque the cap screws (14) to 500 pound-inches.

- (25) Install and connect the elbow (11) and the tube assembly (10).
- (26) Install the breather (9) and the baffle (8).
- (27) Install the preformed packing (6) and the oil level indicator (5), and install the oil level indicator retainer (4).
- (28) Install the gasket (3) and the cover plate (2).
- (29) Extend the oil level indicator to its fullest extent and refill the jack with MIL-H-5606 hydraulic oil only. Replace the indicator.

d. *Installation.* Install the jacks as outlined in TM 9-1440-250-12/2.

213. (Deleted)

214. Outrigger Assemblies

Two outrigger assemblies, each consisting of an outrigger and a jack, are used in the emplacement of the launcher. The procedures outlined in a through d below are for the maintenance of the outrigger assemblies.

a. *Removal.* Remove the outrigger assemblies as outlined in TM 9-1440-250-12/2.

b. *Disassembly.* Remove the jack from the outrigger (fig. 318.10).

c. *Assembly.* Install the jack on the outrigger (fig. 318.10).

d. *Installation.* Install the outrigger assemblies as outlined in TM 9-1440-250-12/2.

214.1. Outrigger Jacks

a. *Removal.* Remove the jacks from the outriggers (fig. 318.10).

Caution: Maintenance should be performed in as dust free an area as possible. Care should be exercised to prevent the entrance of any foreign matter into the hydraulic components of the jack.

b. *Disassembly.*

Note. The key numbers shown in parentheses in steps (1) through (13) below refer to figure 318.10.1 unless otherwise indicated.

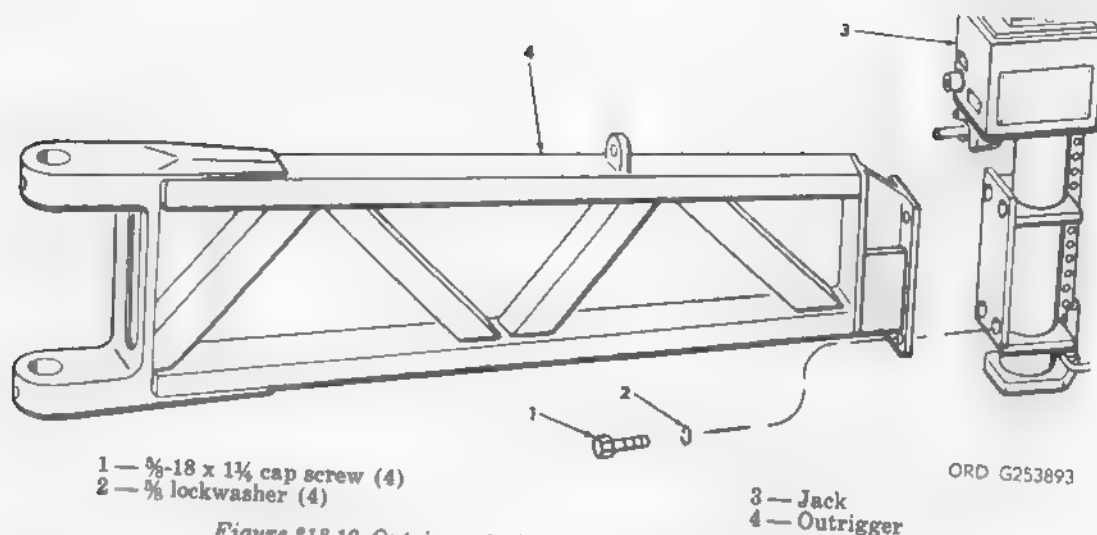


Figure 318.10. Outrigger jack — removal and installation.

- (1) Drain and discard the hydraulic oil by extending the oil level indicator (12) to its fullest extent and inverting the jack.

Caution: Care should be exercised during removal of the cylinder head (5) to prevent damage to the head gasket (6).

- (2) Remove the cylinder head and the head gasket.
- (3) Remove and discard the preformed packing (7).
- (4) Remove the baffle (9) and the breather (10) from the cylinder head.
- (5) Remove the oil level indicator retainer (11) from the oil level indicator (12). Remove the indicator and remove and discard the preformed packing (13).
- (6) Remove the tube (14).
- (7) Remove the chain assembly (15).
- (8) Loosen the setscrew (16) enough to remove the hexagon-head bolt (17), and remove the locking bar (21).
- (9) Remove the adapter (24) by loosening the setscrews (23) and turning the adapter counterclockwise.
- (10) (Deleted)
- (11) Remove the piston (30) by using the jack ram inserter (1, fig. 55.1). Exert

a gentle force on the handle of the jack ram inserter and force the piston upward until it protrudes three inches above the top of the jack. Pull the piston the remaining distance to complete the removal.

- (12) Remove and retain the retaining ring (31) and the scraper ring (32).
- (13) Remove and discard the preformed packings (33 and 34).

Caution: When attempting to remove the locknut, observe the control valve sleeve to determine if it is beginning to turn. If this condition is noted, first remove the valve retaining screws and then remove the locknut. This operation will prevent shearing the screws.

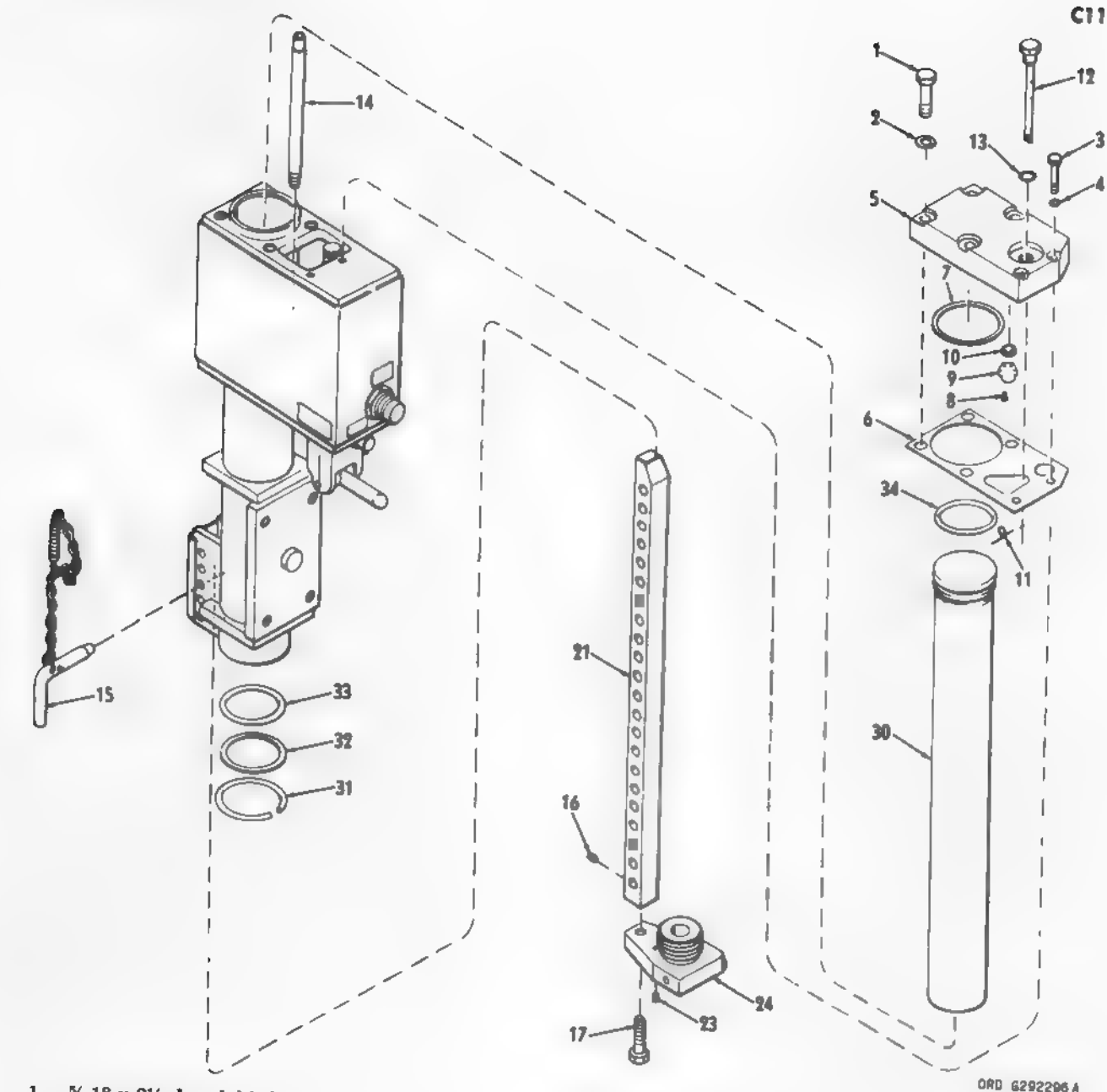
- (14) Remove the relief valve (1, fig. 318.3), control valve (9), and hydraulic pump (13).
- (15) Remove and discard the preformed packings (2, 10, and 14).
- (16) Disassemble the relief valve (fig. 318.4), control valve (fig. 318.5), and hydraulic pump (fig. 318.6).

c. Assembly.

Caution: Dip new preformed packings in clean hydraulic oil before installation.

Note. Replace old preformed packings with new packings.

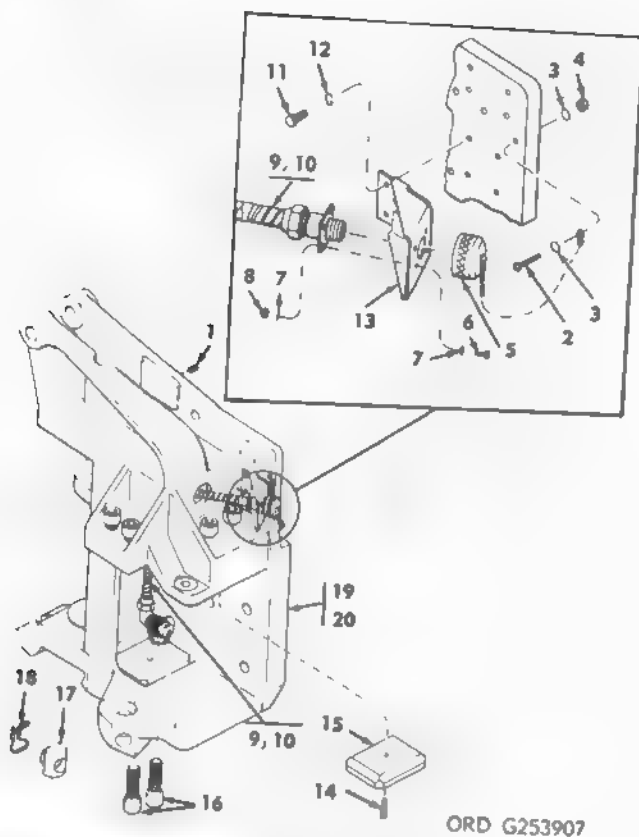
Note. To prevent probable damage to the preformed packing (12, fig. 318.5), the slide (11) should be inserted into the sleeve (9) before installing the packing.



- 1 — $\frac{5}{16}$ -18 x $2\frac{1}{4}$ hex-hd bolt (4)
- 2 — $\frac{5}{16}$ fl washer (4)
- 3 — $\frac{5}{16}$ -24 x $1\frac{1}{2}$ hex-hd bolt (2)
- 4 — $\frac{5}{16}$ fl washer (2)
- 5 — Cylinder head
- 6 — Head gasket
- 7 — $3\frac{1}{2}$ id x $\frac{1}{8}$ thk preformed packing
- 8 — No. 00 x $\frac{3}{16}$ rd-hd dr screw (2)
- 9 — Baffle
- 10 — Breather
- 11 — Oil level indicator retainer 9153625 (p/o oil level indicator 9153627)
- 12 — Oil level indicator
- 13 — $\frac{5}{16}$ id x 0.097 thk preformed packing
- 14 — Tube
- 15 — Chain assembly
- 16 — $\frac{5}{16}$ -24 x $\frac{3}{8}$ cone-pt setscrew
- 17 — $\frac{1}{2}$ x $1\frac{1}{2}$ hex-hd bolt

- 18 — (Deleted)
- 19 — (Deleted)
- 20 — (Deleted)
- 21 — Locking bar
- 22 — (Deleted)
- 23 — $\frac{5}{16}$ -24 x $\frac{3}{8}$ cone-pt setscrew (2)
- 24 — Adapter
- 25 — (Deleted)
- 26 — (Deleted)
- 27 — (Deleted)
- 28 — (Deleted)
- 29 — (Deleted)
- 30 — Piston
- 31 — Retaining ring
- 32 — Scraper ring
- 33 — $3\frac{1}{2}$ id x $\frac{3}{16}$ thk preformed packing
- 34 — $3\frac{1}{2}$ id x $\frac{3}{16}$ thk preformed packing

Figure 318.10.1. Outrigger jack — disassembly and assembly.



- 1—3/8-24 x 3/4 1/2-dog-pt setscrew
- 2—No. 10-32 x 1 1/8 rd-hd screw
- 3—No. 10 fl washer MS15795-208
- 4—No. 10-32 self-lkg hex. nut
- 5—Receptacle cover
- 6—No. 4-40 x 1/2 pan-hd screw (4)
- 7—No. 4 fl washer (8)
- 8—No. 4-40 self-lkg hex. nut (4)
- 9—Conductor-conduit 9022339¹
- 10—Conductor-conduit 9022338²
- 11—1/4-28 x 17/32 hex-hd bolt (4)
- 12—1/4 lk washer (4)
- 13—Receptacle bracket
- 14—No. 10-24 x 1 9/16 shoulder screw (2)
- 15—Jam (2)
- 16—1-8 x 3 3/4 self-lkg screw (6)
- 17—1 1/8-12 self-lkg barrel nut
- 18—Retainer
- 19—Bracket 9153280¹
- 20—Bracket 9153288²

¹ Component of bracket assy 9153289.
² Component of bracket assy 9152898.

Figure 318.11. Bracket assembly—disassembly and assembly.

- (1) Assemble the hydraulic pump (fig. 318.6), control valve (fig. 318.5), and relief valve (fig. 318.4).

Note. The key numbers shown in parentheses in steps (2) through (4) below refer to figure 318.3.

- (2) Install the preformed packings (14) on the hydraulic pump (13) and the preformed packings (10) on the control valve (9).
- (3) Install the hydraulic pump and the control valve.
- (4) Install the preformed packings (2) on the relief valve (1).
- (5) Install the relief valve.

Note. The key numbers shown in parentheses in steps (6) through (19) below refer to figure 318.10.1 unless otherwise indicated.

- (6) Install the preformed packings (33 and 34).
- (7) Install the scraper ring (32) and the retaining ring (31).
- (8) Coat the piston (30) lightly with clean hydraulic oil. Install the piston in the cylinder of the jack by using the handle of the jack ram inserter (1, fig 55.1).
- (9) Slide the bellows (29) over the extended portion of the piston. Position the clamp (28) under the three supports on the bellows, and secure the clamp to the jack.
- (10) Install the adapter (24) and tighten the setscrews (23).
- (11) Install the locking bar (21) and the stop (22) with the hexagon-head bolt (18), flat washer (20), and self-locking hexagon nut (19).
- (12) Secure the locking bar with the hexagon-head bolt (17) and the setscrew (16).
- (13) Install the chain assembly (15).
- (14) Install the tube (14).
- (15) Install the preformed packing (13) and install the oil level indicator (12). Secure the indicator with the oil level indicator retainer (11).
- (16) Install the breather (10) and the baffle (9) on the cylinder head (5).
- (17) Install the preformed packing (7) on the cylinder head.
- (18) Install the cylinder head and the head gasket (6). Torque the hexagon-head

bolts (1) to 300 pound-inches and the hexagon-head bolts (3) to 120 pound-inches.

- (19) Extend the oil level indicator (12) to its fullest extent and refill the jack with MIL-H-5606 hydraulic oil only. Replace the indicator.

d. Installation. Install the jacks as described in paragraph 214c.

215. Bracket Assemblies

Two bracket assemblies are used in the emplacement of the launcher. The procedures described in *a* through *d* below are for the maintenance of the bracket assemblies.

a. Removal. Remove the bracket assemblies as described in TM 9-1440-250-12/2.

b. Disassembly. Disassemble the bracket assembly (fig. 318.11).

c. Assembly. Assemble the bracket assembly (fig. 318.11).

d. Installation. Install the bracket assemblies as described in TM 9-1440-250-12/2.

216. Electrical and Hydraulic Installations

The electrical and hydraulic installations consist of an electrical test station, a test station

valve assembly, and two loading rack clamp assemblies.

a. Electrical Test Station. Remove and install the electrical test station as described in TM 9-1440-251-10.

b. Test Station Valve Assembly.

(1) *Removal.* Remove the valve assembly as described in TM 9-1440-250-12/2.

(2) *Disassembly.* Disassemble the valve assembly as described in paragraph 176b.

(3) *Assembly.* Assemble the valve assembly as described in paragraph 176c.

(4) *Installation.* Install the valve assembly as described in TM 9-1440-250-12/2.

c. Loading Rack Clamp Assemblies.

(1) *Removal.* Remove the clamp assemblies as described in TM 9-1440-250-12/2.

(2) *Disassembly.* Disassemble the clamp assemblies (fig. 264).

(3) *Assembly.* Assemble the clamp assemblies as described in paragraphs 171c and 172c.

(4) *Installation.* Install the clamp assemblies as described in TM 9-1440-250-12/2.

Section IV. MAINTENANCE OF THE BLAST SHIELD

217. General

This section covers maintenance of the blast shields (fig. 5.2). One blast shield is used in the emplacement of each HERCULES monorail launcher (1, fig. 5.3).

218. Blast Shield

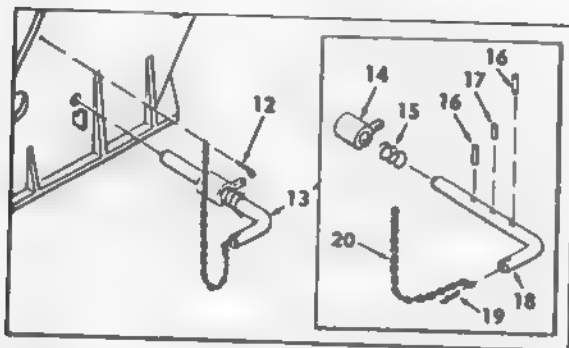
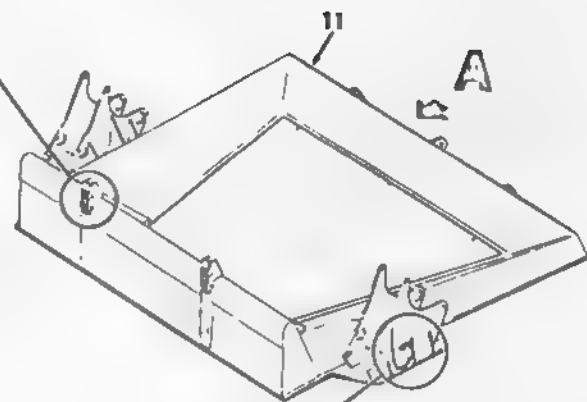
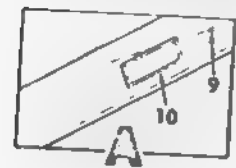
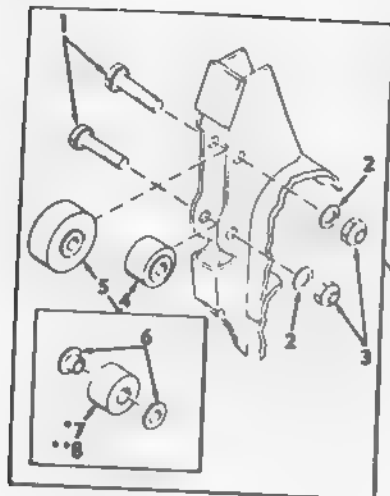
Maintenance procedures for the blast shield (fig. 5.2) are described in *a* and *b* below.

Note. The key numbers shown in parentheses in *a* and *b* below refer to figure 5.2 unless otherwise indicated.

a. (Deleted)

C17

TM 9-1440-252-34



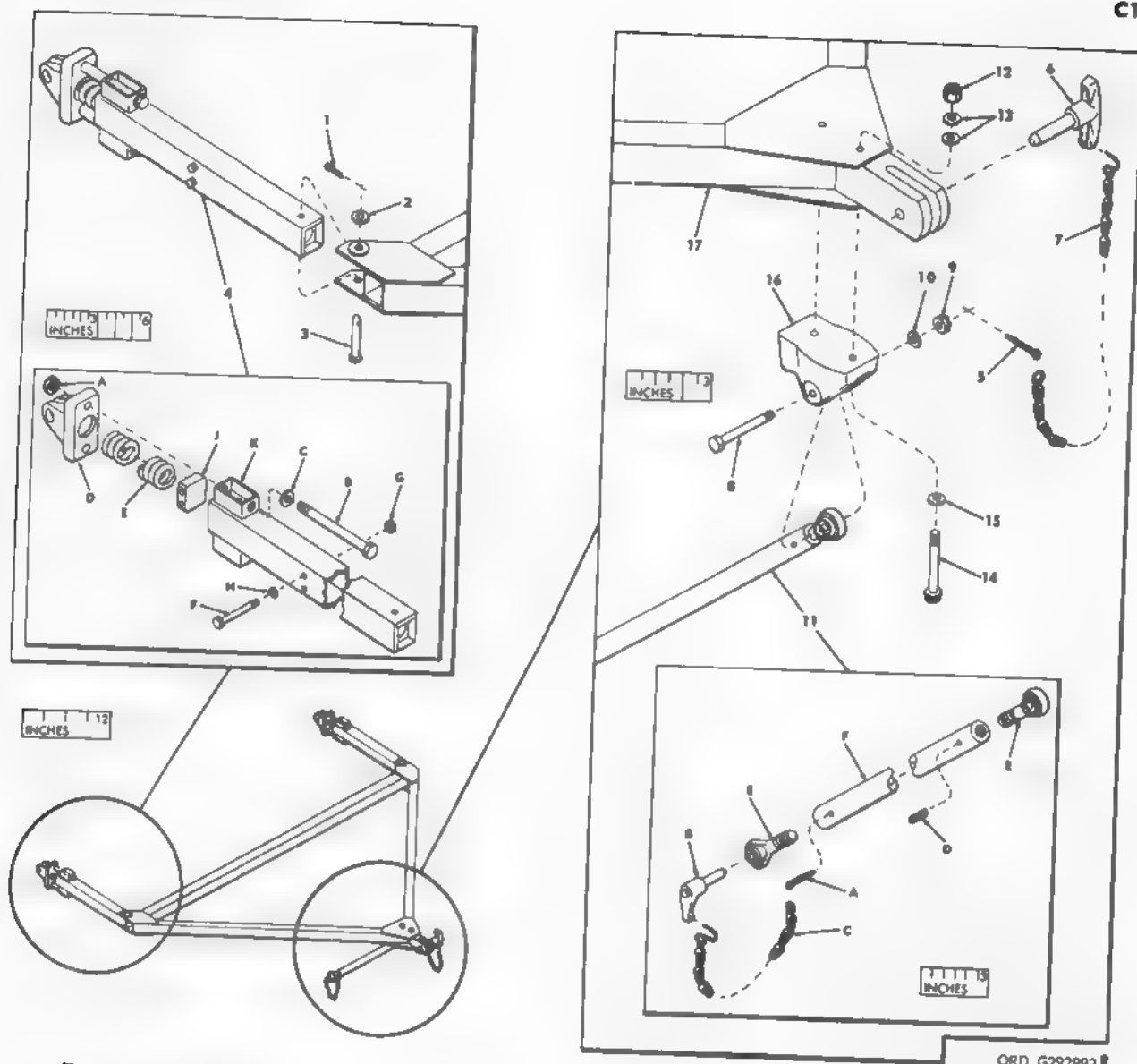
- 1—Bolt (4)
- 2—Washer (4)
- 3—Nut (4)
- 4—Roller 9153938 (2)
- 5—Roller 9153940 (2)
- 6—Bearing (2)
- 7—Roller 9153927 (1)
- 8—Roller 9153939 (1)
- 9—Screw (4)
- 10—Plate (1)

- 11—Deflector kit (1)
- 12—Pin MS-24665-490 (2)
- 13—Stud Assembly (2)
- 14—Sleeve (1)
- 15—Spring (1)
- 16—Pin MS-16562-66 (2)
- 17—Pin MS-9048-238 (1)
- 18—Stud (1)
- 19—Pin MS-24665-490 (1)
- 20—Chain (A/R)
- * Component of item 4
- ** Component of item 5

DRD 6339274

Figure 319. Disassembly and assembly of deflector assembly.

Figure 320. (Deleted)



ORD G292992

- 1— $\frac{1}{8}$ x 1 cotter pin (2)
- 2— $\frac{1}{8}$ fl washer (2)
- 3—0.622 x 3.484 fl-hd pin (2)
- 4—Arm (2)
- A— $\frac{1}{8}$ -16 hex. nut (2)
- B— $\frac{1}{8}$ -16 x $7\frac{1}{2}$ hex-hd bolt (2)
- C— $\frac{1}{8}$ fl washer (2)
- D—Cover
- E—Spring
- F— $\frac{1}{4}$ -28 x 2.925 hex-hd bolt (2)
- G— $\frac{1}{4}$ -28 self-lkg hex. nut (2)
- H— $\frac{1}{8}$ fl washer (2)
- J—Spring retainer
- K—Receptacle
- 5— $\frac{1}{8}$ x $1\frac{1}{2}$ cotter pin
- 6—Quick-release pin
- 7—Chain

- 8— $\frac{1}{8}$ -16 x $3\frac{1}{2}$ hex-hd bolt
- 9— $\frac{1}{8}$ -16 castellated hex. nut
- 10— $\frac{1}{8}$ fl washer
- 11—Retainer
- A— $\frac{1}{8}$ x $1\frac{1}{2}$ cotter pin
- B—Quick-release pin
- C—Chain
- D— $\frac{1}{8}$ x $1\frac{1}{2}$ spg pin
- E—Rod end
- F—Link
- 12— $\frac{1}{8}$ -18 self-lkg hex. nut (2)
- 13— $\frac{1}{8}$ fl washer (4)
- 14— $\frac{1}{8}$ -18 x 4.419 machine bolt (2)
- 15— $\frac{1}{8}$ recessed washer (2)
- 16—Bracket
- 17—Frame

Figure 221. Blast deflector positioner—disassembly and assembly.

*b. Blast Shield (73 and Subsequent).**(1) Removal.*

- (a) Remove the blast deflector positioner (12) as shown in TM 9-1440-250-12/2.
- (b) Remove the ratchet wrenches (10) as shown in TM 9-1440-250-12/2.
- (c) Remove the rods (9) as shown in TM 9-1440-250-12/2.
- (d) Remove the arm assemblies (8) as shown in TM 9-1440-250-12/2.

(2) Disassembly.

- (a) Disassemble the blast deflector positioner (fig. 321).
- (b) Disassemble the arm assembly.

(3) Assembly.

- (a) Assemble the arm assembly, as described in 1 through 3 below.
 - 1. Clean the bearing bores of the arm assembly and treat for pre-

vention of corrosion. Refer to TM 9-1400-250/15/8 for cleaning and corrosion prevention treatment.

2. Install the bearings and secure with the retaining rings.

3. Install the lubrication fittings.

(b) Assemble the blast deflector positioner (fig. 321).

(4) Installation.

(a) Install the arm assemblies (8) as shown in TM 9-1440-250-12/2.

(b) Install the rods (9) as shown in TM 9-1440-250-12/2.

(c) Install the ratchet wrenches (10) as shown in TM 9-1440-250-12/2.

(d) Install the blast deflector positioner (12) as shown in TM 9-1440-250-12/2, if required.

(e) Refer to LO 9-1400-250-20 for lubrication of the arm assemblies.

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SUBJECT: PHYSICS DEPARTMENT
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Section V. MAINTENANCE OF HERCULES MOBILE LAUNCHING

SECTION MODIFICATION KIT ELECTRICAL SYSTEM

219. General

This section provides the procedures for performing maintenance on the components of the mobile launching section modification kit electrical system. Maintenance of the cable assemblies and loudspeaker is described in TM 9-1440-250-12/2. The precautions described in paragraph 58a must be observed when performing maintenance on these items.

220. Generator Junction Box

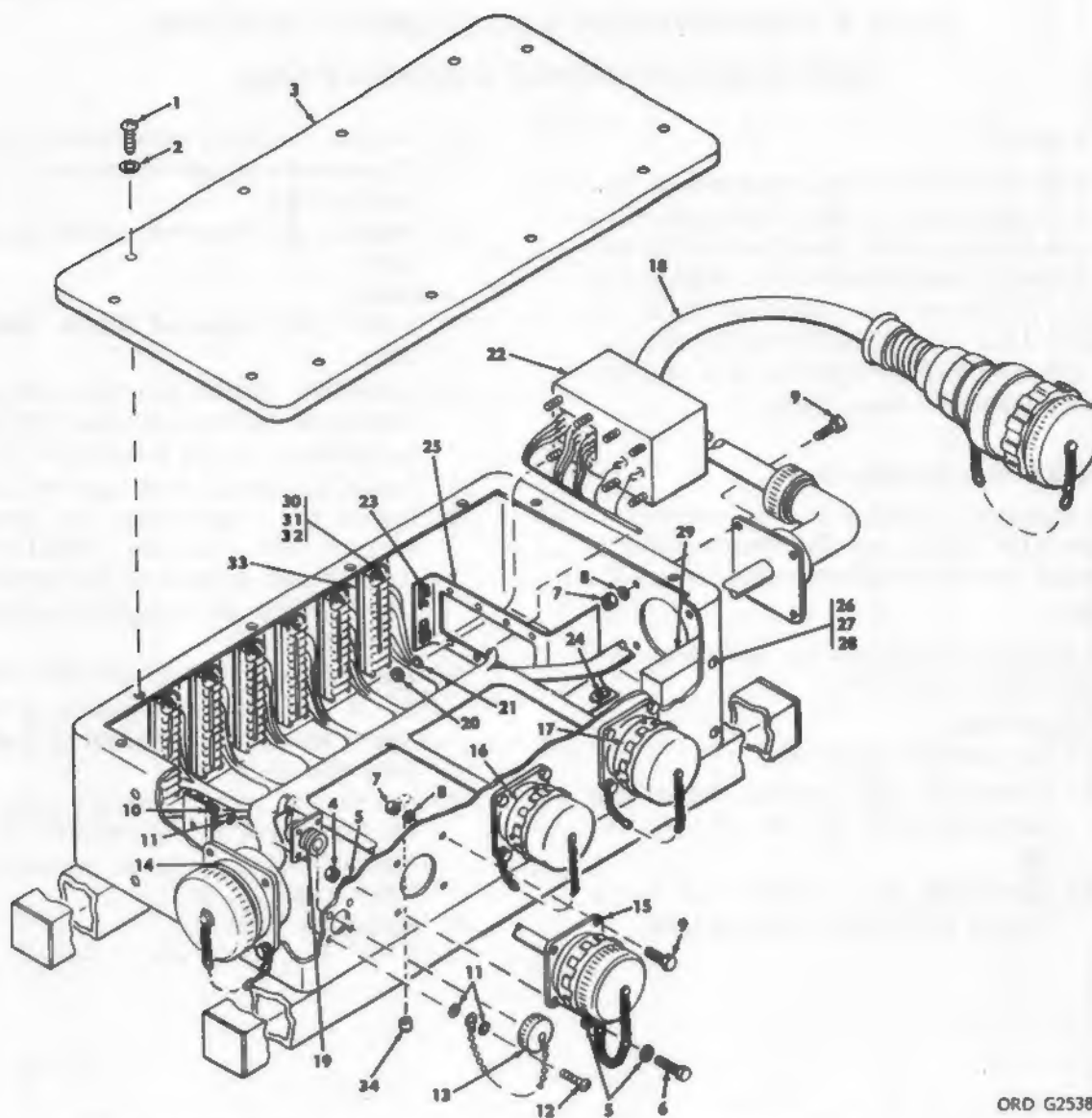
The generator junction box is mounted on the generator trailer and distributes power to the section operating equipment trailer and the launcher.

Note. The key numbers shown in parentheses in *a* and *b* below refer to figure 322.

a. Disassembly.

- (1) Remove the cover (3).
- (2) Disconnect and remove the wiring harnesses (14, 15, 16, 17, 18, and 19).
- (3) Disconnect and remove the transformer and wiring harness (22).

- (4) Remove the transformer bracket (25).
 - (5) Disconnect and remove the resistor assembly (29).
 - (6) Remove the terminal board groups (33).
- ##### *b. Assembly.*
- (1) Install the terminal board groups (33).
 - (2) Install the resistor assembly (29) and connect to the terminal board groups as described in TM 9-1440-250-35/1.
 - (3) Install the transformer bracket (25).
 - (4) Install the transformer and wiring harness (22) on the transformer bracket and connect to the terminal board groups as described in TM 9-1440-250-35/1.
 - (5) Position each wiring harness connector at its appropriate mounting hole. Apply sealant as described in TM 9-1400-250-15/8.
 - (6) Install the wiring harness (14, 15, 16, 17, 18, and 19) and connect to the terminal board groups as described in TM 9-1440-250-35/1.
 - (7) Install the cover (3).



ORD G253897

- | | |
|-------------------------------------|-------------------------------------|
| 1—No. 10-32 x 5/8 pan-hd screw (12) | 18—Wiring harness 9978530 |
| 2—No. 10 fl washer (12) | 19—Wiring harness 9978547 |
| 3—Cover | 20—No. 8-32 self-lkg hex nut (8) |
| 4—1/4-28 self-lkg hex. nut (4) | 21—No. 8 fl washer (8) |
| 5—1/4 fl washer (12) | 22—Transformer and wiring harness |
| 6—1/4-28 x 29/32 hex-hd bolt (4) | 23—No. 10-32 x 1/2 pan-hd screw (2) |
| 7—1/4-28 self-lkg hex nut (16) | 24—1/4-28 x 5/8 pan-hd screw |
| 8—1/4 fl washer (16) | 25—Transformer bracket |
| 9—1/4-28 x 25/32 hex-hd bolt (16) | 26—No. 10-32 self-lkg hex nut (4) |
| 10—No. 4-40 self-lkg hex nut (4) | 27—No. 10 fl washer |
| 11—No. 4 fl washer (6) | 28—No. 10-32 x 5/8 pan-hd screw (4) |
| 12—No. 4-40 x 5/8 pan-hd screw (4) | 29—Resistor assembly |
| 13—Receptacle dust cover | 30—No. 8-32 self-lkg hex nut (16) |
| 14—Wiring harness 9978528 | 31—No. 8 fl washer (16) |
| 15—Wiring harness 9978491 | 32—No. 8-32 x 7/8 pan-hd screw (16) |
| 16—Wiring harness 9978524 | 33—Terminal board group (8) |
| 17—Wiring harness 9978480 | 34—Plug |

Figure 322. Generator function box—disassembly and assembly.